Vol. LXXXIX., No. 3256.—Saturday, July 1, 1905.

THE BUILDER

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The Appreciation of Sculpture.

THERE is no art, unless we were to except architecture, which is so little understood and so little cared for by the general public in this country as sculpture. Painting, though also little rightly understood, may be said to be a popular art in England; but sculpture is distinctly an unpopular one, as is obvious enough from the answer one constantly gets in asking people how they liked the sculpture at the Academy—"Oh, we did not look at the sculpture." Yet there is no doubt that sculpture is at the present time the art which is at its best in England. English sculpture has made immense progress during the last quarter of a century; there is far less of it than there is of painting (and no wonder, seeing the poor encouragement our sculptors get), but the proportion of it which is of a high class is much greater than in painting.

Any effort to promote a better understanding of sculpture on the part of the public ought to be welcomed; and for one effort in this direction we have to thank a well-known and intellectual American critic Mr. Russell Sturgis, whose short treatise on the subject* is published both in New York and London. We do not know that the scope of the work quite answers to its title. "The appreciation of sculpture" would seem to imply a direct and formal attempt to expound the æsthetics of sculpture; what is to be looked for from it as an art, and what is beyond its proper limits. A good deal of this may be gathered from Mr. Sturgis's book, but it is to be gathered from putting together isolated remarks rather than from any continuous exposition. Considering the difficulty of the subject to the average reader, it might have been more useful if the central line of the argument had been more clearly emphasised throughout. But those who read it with attention may learn much more as to philosophy of sculpture than is usually present to the minds of the laity.

Mr. Sturgis's method is to consider in succeeding chapters the predominant characteristics of sculpture of several great periods of the art—the Greek Period; the Roman Period; the European Middle Ages; the Italian Revival; the Italian Decadence and French Transition; and Recent Art. The latter section, as the author tacitly assumes, is capable of being considered in its broad aspect independent of nationality, since modern European art is that of Europe rather than of its component nations; and national differences are rather differences of power and genius than of theory or aims—at least in respect of the most highly civilised nations of the world, among which we must of course reckon the United States as a member of the

* "The Appreciation of Sculpture: A Handbook." By Russell Sturgis, A.M., Ph.D. New York: The Baker & Taylor Co. London: B. T. Batsford.

same artistic family. American sculpture has not attained to the power of the best French or (we are inclined to think) of the best English sculpture, but its aims are the same.

In his first chapter the author sets before us the Greek standard of excellence, as the best basis for the consideration of the subject; not forgetting, however, the important fact that we do not see the Greek sculpture with the colour with which its creators embellished it, but he is clear that the modern world is nevertheless quite right in taking it as a standard of excellence; we do not see all that the Greek sculptor did, but as far as it goes it remains the finest example of pure form that can be seen. And the author is right also in drawing attention to the element of artistic convention which is present in the great period of Greek sculpture, in spite of its general truth to nature. The desire for decorative and artistic quality of design came before (even in regard to time) the desire for realistic truth to nature. The conscientious adherence to the details of the nude model will not produce the quality of style which we realise, but which it is so difficult to define, in the sculptures of the Parthenon. This is a point to be borne in mind in reference to the foolish outbreak of exaggerated praise about a certain statue in the New Gallery, which has been said to be like Greek art revived. That is exactly what it is not; it is a piece of realistic modelling, and Greek sculpture was not realistic modelling. A perusal of Mr. Sturgis's chapters on Greek sculpture should at any rate enable people to perceive the fallacy of this kind of criticism.

The chapter on Roman Empire sculpture includes the suggestion, which was not uncalled for, that there is more in Roman sculpture than it has been the fashion to think lately, and that it need not be dismissed as merely commonplace, though no doubt the habit of erecting multitudinous statues as a part of the *ensemble* of a building did lead to the production of many works which were rather decorative furniture than sculpture in the higher sense of the word. And the author suggests one reason for the superior sculptural suitability of the Roman costume as compared with modern costume, viz.: that it is a kind of abstract form of dress which was not affected, as modern dress is, by rapid changes of fashion. A modern sculptor, in representing some event which happened 50 years before, would have to study the dress of the period to produce a true representation; the Roman sculptor, in representing such an event in a relief sculpture, was not under this necessity. Of course there is the additional and still greater advantage of the simplicity and breadth of line of the classic costume, and its freedom from small disturbing details. In referring to this point at the end of the book, he observes—"That Roman relief" (Marcus Aurelius offering sacrifice) "is a splendid piece of ceremonial record; now let one of our modern men treat the great events of our time in a way as abstract—with as few figures—in a form as susceptible of being built into a wall; but with the grace of the Italian XVth century, and the faultless details of early Greece. There is nothing contradictory in that." Well, the conclusion is rather doubtful. Such a production would certainly not be on all-fours with the Marcus Aurelius bas-relief, because that represented the costume pretty much as it really was. The real escape from the difficulty of modern costume in personal monuments—that frequently employed by the French with such good results—giving only the portrait bust and adding symbolical figures, Mr. Sturgis does not, as far as we observe, insist upon. On the other hand, he gives an illustration of an American sculptor's realistic portrait of Horace Greeley, seated in coat and trousers with a newspaper on his knee, apparently with commendation. It has a certain interest, but that is not "sculpture"; it is not what the art of sculpture is for; it is a treatment, in our opinion, only suited for painting.

Granting with the author that sculpture practically died, as far as we have any record, between the sixth and the tenth centuries, and that there is an interesting attempt at revival of it in the Romanesque churches of the Xth century, we think the author quite exaggerates the sculptural importance of such work as the long shapeless sculptures of Chartres shown in his Plate XIX. These are not so much sculpture as carved architectural features; they are rather a part of the architecture than an example of sculpture; and to say that "it was left for the Frenchmen of the XIIth century to teach the world what sculpture might be when closely affiliated with architecture" is to say what is in the fashion now, no doubt, but what is hardly sound criticism. The mediæval sculpture of that period is only good relatively, and according to an imperfect mediæval standard, not according to a central standard; and we see not what is the point of drawing the reader's attention in the first chapter to Greek sculpture as the highest example of form, if he is to find such exaggerated praise given subsequently to such comparatively naïve and childlike work as the Gothic sculpture of the XIIth century. True, that it becomes in a remarkable way a part of the architecture, as in the lower portion of Wells Cathedral; but that is because of the rigidity of line and lack of vitality in the sculpture itself. If sculpture is to be closely assimilated with architecture, it must be by some better method than killing the sculpture in order to assimilate it with masonry.

We are the more struck with this when we consider the cold and half-hearted tone in which the author speaks of Michelangelo's Medici tombs and their wondrous figures, which are in fact above and beyond criticism. In regard to some of the eminent sculptors of the Italian Renaissance, less great and more measurable than Michelangelo, there are some useful remarks. But we prefer to come to some of the questions raised in respect of recent sculpture. The author remarks on the continued vitality of sculpture; that is, that it has at no time become, like architecture, an effort to revive the art of the past, because it is an art which is constantly getting new life from the direct reference to nature. This is true of the art generally though not of all individual sculptors—Gibson for instance. Among modern elements in sculpture is mentioned that of the sculpture of sentiment, a thing, as Mr. Sturgis says, almost unknown to the great past, and which in our opinion has been carried a good deal too far in the present. What then is sculpture to aim at now? In our opinion, either the expression of abstract thought, or the realisation of abstract forms of life and energy. By "abstract" in this case we mean divested of trivialities and peculiarities of detail, and invested with the broader and more universal characteristics of human life and action. That is why we consider that life size representations of figures in their ordinary costume, whether of high or low life, whether of rural labourer or Field Marshal in uniform, are beside the real ends of sculpture, which is a high and severe form of art, dealing with essentials and not with accidentals. The author raises the question as to the fitness, in an artistic sense, of the representation of nude figures employed in labours, as in M. Boucher's "à la Terre" and Mr. Nichaus's figure of a man hammering at a drill, and does not seem to suggest quite a decisive answer to it. Our answer would be quite decisive; the fact that there are no nude workmen in modern life has nothing to do with it; sculpture is concerned with human form and action, which belong to what is permanent, and not with details of clothing which are in comparison trivial and transitory. And it is in the abstraction of the subject from non-essential details, in the lifting it above the ordinary circumstances of realism, that much of the quality which we feel as "style" in sculpture consists. In a book on the appreciation of sculpture we should have wished and expected to see some definite attempt to explain to the reader what style means, and (by example) what is the difference between a work with style and a work without it. Mr. Sturgis does not, as far as we can find out, mention the word "style"; it is certainly not in his index. But he is conscious that there is something unsatisfactory in the relief by Mr. Saint-Gaudens forming the memorial to Colonel Shaw. In a way we like that work; it is simple and sincere; but what we said the moment we saw the model of it at the Paris Exhibition was that it was totally without style. If Mr. Sturgis could have got his readers to realise what is the difference between a work with style and a work without, he would have done a great deal towards advancing the comprehension of sculpture in public mind.

One curious mistake we must correct; the assertion that the Parthenon frieze marbles at the British Museum suffer in effect from being seen under glass, a point which is more than once referred to. There is no glass whatever; there are top and bottom frames with vertical iron stays between them, which in a photograph might give the appearance of glazing. The point of the mistake is that it shows that Mr. Sturgis has not been in the British Museum, and is only judging from photographs.

A FURTHER EXAMINATION OF THE BUILDINGS AT BAALBEK.

By R. Phenè Spiers, F.S.A.

I.—The Circular Temple.

THE circular temple, the remains of which are in the village and situated about 100 yds. to the south of the propylæa, is enclosed within a private dwelling, and, although visitors have been allowed to photograph it, it was not possible to ascertain by excavation the nature of the substructure until the Germans went there in 1900. Their researches have shown that, although so far as the interior and parts of the upper structure were concerned, Messrs. Dawkins and Wood's work is in the main correct, the plan shown in their drawings falls short in some particulars. At present the Germans have only published a plan showing the podium and steps on which the temple was raised. Instead of a single flight of steps in front of the porch, after the first eight steps descending, there is a narrow landing, and then four more steps, all these standing within the podium projection. Then follows a second flight of seven steps which return at the angles, as shown on the plan. The detached columns round the outside of the circular cella, which in Dawkins and Wood's work are shown as 9 ft. from the responds on the cella walls, are in reality only 2·9 ft., as can be seen in the photographs.

A view of the front of the temple made by L. F. Cassas towards the close of the XVIIIth century, and published in the work which bears his name ("Voyage Pittoresque de la Syrie"), shows by the breaks in the entablature that in front of the existing columns of the portico (two of them attached and two detached, on the right and left) there were four other columns, which are shown on Cassas's plan. Whether he was able to excavate and found the bases or simply surmised their existence is not known, but at all events the Germans have found them and shown them on their plan. Unfortunately Cassas died before his work was published and left but few notes, so that when his drawings appeared, descriptions were given of very few of the plates and nothing was said about the circular temple. His plan of the temple also must have been incomplete, as the editor copied that of Dawkins and Wood's with all its faults, going one step further and putting dimensions between the columns round the cella and their responds. These we have alreadyshown were incorrect; they would both of them seem to have concluded that the distance of the columns round the cella was the same as that of the angle column of the portico for the same. The plan we publish shows the correct arrangement.

The capitals of the columns round the cella, which in both these works are shown square, are really pentagonal, as are also the bases, with one exception. Messrs. Dawkins and Wood indicate on their drawings all the small columns which in two stories decorated the interior of the cella, and may have been there in 1751 when they visited the town. Towards the close of the century, however, the church was abandoned, and they are not indicated in Cassas's drawing. We have indicated them in our restoration to account for the circular and triangular pediments which, built into the wall, still exist, and also for the support of the projecting entablature of the lower story. From photographs of the exterior and interior we have restored the cella, and suggested the possible design of the tetrastyle portico in front. The bases only of the four front columns have been found; of those in the rear the left-hand column (A) and the attached column only remain, and there is but too much reason to fear that the first-mentioned column may fall over any day.

There is absolutely no historical record of this temple, which owes its preservation to the fact that it was converted into a Christian church, probably by Theodosius, and dedicated to S. Barbe, the name by which it is now known. Crosses have been cut in the walls externally and internally, and on the east side of the cella are the traces of a fresco representing a Greek cross within a circle.

As will be seen by the plan, the design is of an unusual type, and a unique example of its kind. It is supposed to have been dedicated to Venus, whose statue was erected in the centre of the cella, and to have had other statues in the niches of the upper story and between the columns of the lower story. Externally the building is of the richest description; between the responds of the columns were niches sunk in the wall with elaborate shell-heads and curved entablatures, a favourite feature in all these Syrian temples. In these niches there were probably statues, of which the pedestals only remain. Above the niches were swags of flowers. The most remarkable feature of this temple, however, is the brilliant way by which the junction of the entablature of the rectangular portico with that of the circular cella has been effected. The latter, as will be seen by the plan (left-hand side), sweeps back with segmental curves, which not only give a remarkably picturesque combination to the exterior, but solve a very difficult problem in the juxtaposition of a circular and rectangular feature.

The elaborate carving of all the mouldings of the entablature (seen to a larger scale in the plate, which shows fragments of the cornice of the cella of the Temple of Jupiter, and is of similar design), and the setting out of the modillions, have produced a richness of effect which, notwithstanding the decadence of the style, must have been quite unparalleled. Far away from the Roman centre and unbridled by the principles of Vitruvius, the Syrian sculptor gave free play to his imagination, and not only conceived an original treatment of the main lines of his entablature, but in the arrangement of the foliage of the capitals produced a novel design in which there are three ranges of leaves, the upper row taking the place of the stems from which the volutes usually rise. As the leaves of the upper range come in the centres and the diagonals the leaves of the lower ranges have changed their axes.

In the conjectural restoration we have made of the portico the slight projection shown of the entablature over the two centre columns in order to introduce the pediment is authorised by the well-known coins of Philip and later emperors, published in Donaldson's "Architectura Numismatica," which represent the front of the propylæa.

The precarious condition of the building has been already referred to; the accompanying small photograph of one of the bays shows how the entablature is falling apart.

Portion of Circular Temple, Showing State of Entablature.

II.—The Christian Basilica in the Great Court.

In a previous article on the acropolis of Baalbek* it was stated that the clearing away of the superincumbent rubbish by the Germans had revealed the fact that the triple apse of the Byzantine church, erected in the middle of the great court, had been built on the flight of steps leading up to the Great Temple, and that the lower stage of this flight had been found buried beneath the rubbish and in the walls of this triple apse. Portions of the walls of this church had long been visible above ground, as may be seen in Joyau's plan published February 11. The clearing of the site down to the pavement of the church and subsequent examination below the same brought to light the existence of the podium of an altar built in the great court. At first the great size of the stones of this podium suggested that it had been cut in the solid rock. This, however, was found not to be the case, the podium being built in large blocks of stone coming from the same quarry as that which had furnished the trilithon and all the masonry in the acropolis, its foundations being carried down to a considerable depth. On the east side of this podium were a series of steps leading to the top, on which it was supposed that the altar proper was built. The steps being on the east side showed that the priests when performing the sacrifice faced the temple, which is contrary to the usual custom. This may have arisen from the fact that the altar was built on the site of an earlier altar dedicated by the Phœnicians to Baal, and happened to be much farther than usual from the flight of steps leading up to the temple.

It is difficult to understand why the Byzantine Christians who built the church should not first have levelled to the ground all remains of the Roman

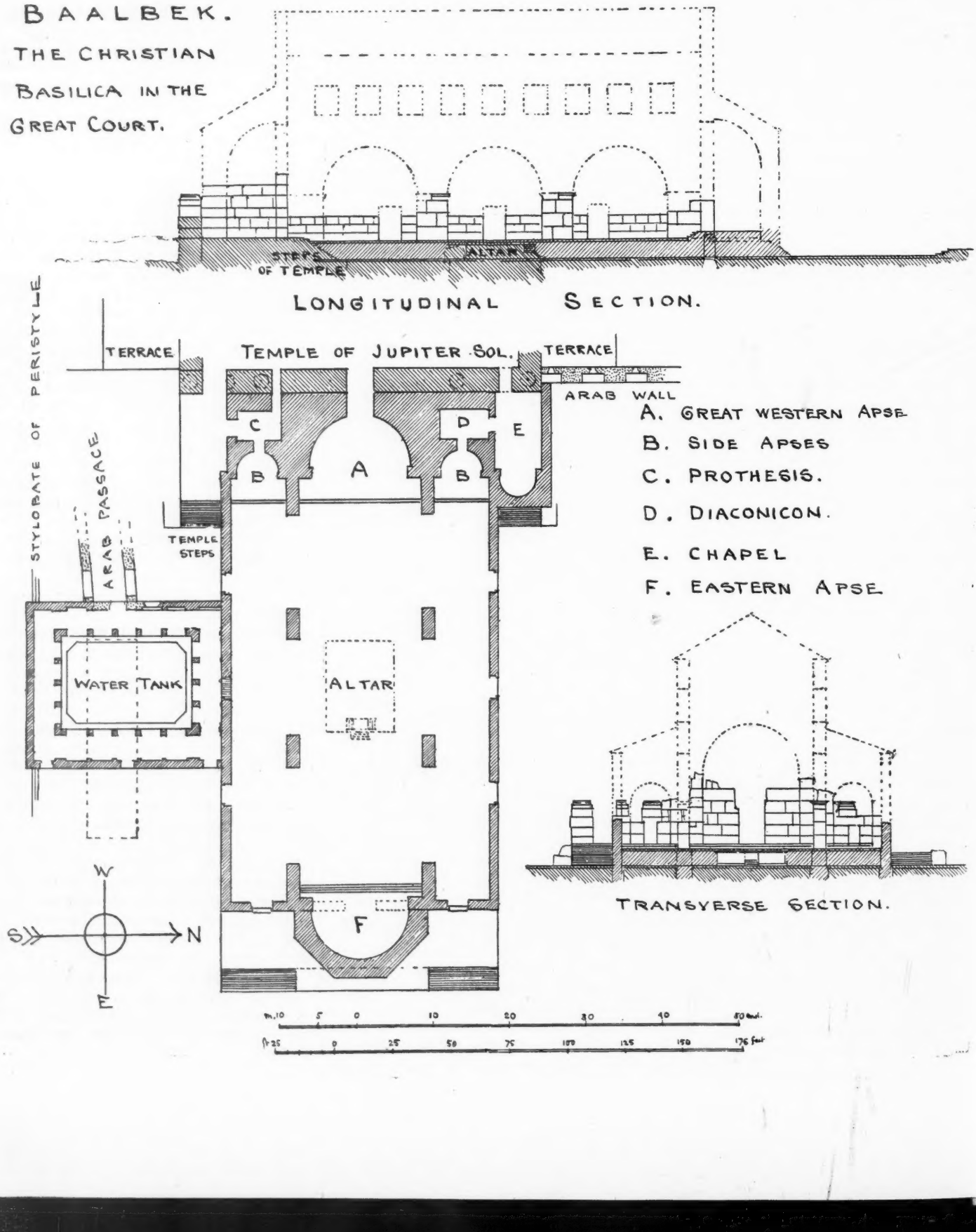
* See *Builder* of February 11 of this year.

sacrificial altar, especially as it necessitated the erection of an immense platform on which to build the basilica in order that its pavement should rise above the podium. The floor of the church was thus raised 8 ft. above the pavement of the great court, and necessitated the erection at the east end of a flight of steps and a landing in front of the three eastern doorways. It is possible, however, that the Christians desired to erect a church which should rise above the peristyle and the great halls which surrounded the court.

The plan of the church as first built (see below) consisted of nave and aisles 179 ft. long and 110 ft. wide within the walls, the nave being divided from the aisles by three great semicircular arches on each side carried on two rectangular piers 13 ft. 6 in. by 3 ft. and abutments 15 ft. long against the east and west walls. At the west end were three semicircular apses, the central one twice the width of those terminating the side aisles.

In the centre of these side apses were doorways leading on the right to a small chamber in the rear, which we assume to be the diaconicon, and on the left to a similar chamber, probably the prothesis or room where the offerings of the faithful were deposited, there being two other entrances to it, one on the south, the other on the west side. From the diaconicon a door led to a small chapel on the north or right-hand side with an eastern apse. The diaconicon or priests' chamber served therefore the basilica and the small chapel. At a later period, probably on account of a second change in the ritual, an apse was built at the east end of the church, and the great central doorway and wall on each side of it were cut away to open out the apse to the church. This apse was built on part of the landing and flight of steps already referred to, leaving steps on each side to approach the side doorways. At the same time a wide opening was cut in the centre of the great western apse, which thus became the principal entrance to the church. Besides the doorways already mentioned, there were three others on the north and south sides, but no trace of any steps leading up to them. Similar side entrances are found in other Syrian churches, and notably in the great church of St. Simeon Stylites at Kalat Sema'n, and they may have been provided in those cases where at certain periods of the year a large number of pilgrims assembled, who, standing outside, might still take some part in the ceremonies going on inside, unless temporary wooden flights of stairs were provided for the incoming and outgoing worshippers. Two distinct periods therefore must be ascribed to the church, and it remains to be considered to which the great arches of the nave belong.

In the earlier churches, built not only



in Syria but throughout Europe, the builders availed themselves of the materials found on the spot, and utilized not only the columns but the entablatures carried by them, on which they built their clearstory walls. This, however, made the distances between the columns too small to allow of the services being followed by the worshippers in the aisles, and consequently at an early period, whilst still employing the old columns if available, they spanned them with arches to carry the superstructure. In Europe, when columns were not procurable, they replaced them by square piers; but in Syria, where the masons at an early period were able to work columns, sometimes cutting both base and capital out of the same block, there are no churches with square piers carrying arches dividing the nave and aisles. About the middle of the VIth century, according to M. De Vogüe, they conceived another system, viz., that of three great arches carried on rectangular piers with deep abutments against the end walls; and it is a singular fact that this system of wide semicircular arches resting on long rectangular piers never seems to have been followed in Europe.

In the plan published by the Germans the whole of the structure, including the triple apse with the exception of the eastern apse, is hatched as belonging to one period, from which we may assume that the abutments of the nave arcades and the walls of the triple apse are in their opinion coeval; but the description which accompanies the plan is not quite intelligible. The statement that Theodosius the Great (374-395) destroyed in Baalbek the renowned great temple and transformed it into a church is not in accordance with the text quoted in note (p. 139, Feb. 11), wherein it is stated that Theodosius destroyed some of the Pagan temples, but converted the Great Temple dedicated to Baal, and known as the Trilithon, into a Christian church, and the passages following in the German text are still more contradictory, viz., "the conceived opinion that in the basilica, at least in the original plan without the eastern apse, we still possess the church of Theodosius," is not in accordance with what follows: "The system of the nave* agrees with that of the basilica of Qalb-Louzé, which De Vogüe places in the VIth century." It is difficult to understand how Theodosius at the close of the IVth century could have conceived a type of plan which was not evolved till the VIth century.

De Vogüe gives illustrations of a second church with a similar plan at Roueiha. Mr. Howard Crosby Butler, in his work recently published on "Architecture and Other Arts" in Syria, gives plans of three other churches of the same type at Djuwaniyeh, Bettir, and Bashmisli, to which he ascribes the same date, and adds that this was the last principal change in the plans of these Syrian churches. In connexion with this basilican church at Baalbek there is another important consideration which would determine its date. Dr. Edwin Freshfield, in a paper contributed to the Society of Antiquaries on April 3, 1873, pointed out that during the reign of Justin II. (565-574), owing to a change in the liturgy, it became necessary to have three apses, and he affirms that previous to that period only one apse was provided, and that the triple apse of St. Simeon Stylites was a later addition. If that is the case this basilica at Baalbek may date from the second half of the VIth century and the eastern apse must have been built at a still later date.

There still remains sufficient of the western end to determine the height of the three apses. The great arches of the nave are gone, but two of the piers retain their impost mouldings, so that as the arches in other Syrian examples of the same class are always semicircular, the height of their crowns can be determined. Of the eastern apse the plan only remains. According to the Germans the interior of the church was lined with marble, suggested by the holes for the cramps of the slabs and the discovery of numerous fragments of marble in the excavations. Of the upper part of the superstructure only gigantic console brackets of two sizes have been found, on which the roof trusses were carried, as in the church at Qalb-Louzé. Based on this latter church and of that at Roueiha, we have indicated in dotted lines a conjectural restoration of the whole church.

When clearing away the soil on the south side of the basilica the Germans discovered the remains of an open court surrounded by what was probably a vaulted arcade, judging by the remains of the piers and wall responds, and in its centre the traces of a large tank. The plan only is given in the German publication, so that the height of the walls and the depth of the tank are not known. Although built up against the south aisle wall, there was no entry from the church, the central doorway in this aisle having been blocked up. There were entrance doorways on the east and west sides, and a covered corridor, originally vaulted over, led up from the lower level on the south side of the Great Temple, this latter, of Mahommedan work, suggesting that they had utilised this open court with its tank for their own ablutions when the Christian church was converted into a mosque. The junction of this corridor with the arcade round the court shows that it was a later addition. But whether the court with its tank was built by the Christians or the Mahommedans there is at present no evidence. The south wall of the court was built on the stylobate of the peristyle round the great court, and other rooms were built across the peristyle pavement. In this tank, or piscina, the Germans say, "One will hardly venture to recognise an ancient Christian baptistry, but in all likelihood the swimming pond of a larger bath, which, in accordance with a custom frequently attested in ancient times, was united with the basilica." We cannot call to mind the existence of any such feature attached to Christian basilicas, but if the church had been utilised as a mosque its use becomes at once apparent.

* Viz., the three great arches on either side between nave and aisles.

UNIVERSITY HONOUR TO AN ARCHITECT.—The Senate of Dublin University have passed a "grace" for conferring the honorary degree of LL.D. upon Sir Thomas Drew, President of the Royal Hibernian Academy.

NOTES.

The London Water Board.

MR. BRUDENELL CARTER, the well-known oculist, formulated a complaint last week in the *Times* against the Water Board of some public importance. It was that he and other residents at Clapham Common and Brixton were deprived of water for more than a day without notice, and apparently on the ground that water had lately been difficult to filter owing to recent rain. The charge is really one of absolute incompetence on the part of the officials of the Water Board. It is not the first time that complaints have been heard against the administration of the new Board. It is of the first importance that public attention should be drawn to these delinquencies, since it is only by public protest that they can be prevented in the future.

Workmen's Compensation.

THE Court of Appeal in two cases, Wilson *v.* The Ocean Coal Company, and Treherne *v.* The Ocean Coal Company, have just decided a point of some interest to employers under the Workmen's Compensation Act. The facts were the same in both cases, save that in the first the workman was suing the Company for a sum deducted from his wages in respect of a contribution to a provident scheme; whereas in the second case the workman was claiming to be entitled to the benefits of the Workmen's Compensation Act, and the Company alleged that he had contracted himself out by reason of his acceptance of a scheme. In November, 1898, a scheme had been duly certified by the Registrar of Friendly Societies, under section 3 of the Workmen's Compensation Act, and it was to remain in force for five years, and the plaintiffs in both cases had become parties to the scheme. On December 9, 1903, the date fixed for the termination of the original scheme, it was renewed for a further period of five years, and notices to the effect were posted in the colliery. The plaintiffs had not enrolled themselves under this new scheme, which differed in its terms in some respects from the old scheme, and they had joined in meetings, at which it had been decided that the men preferred to remain under the Workmen's Compensation Act, but no formal steps had been taken by them to revoke the scheme. Under the original scheme the practice had been for the men who wished to leave the scheme to give one month's notice, and the County Court judge had held in both cases that since they had given no such notice they remained bound by the renewed scheme. The Court of Appeal reversed this finding in both cases, and held that the workmen had not assented to the new scheme. It will be observed that the Act provides for a scheme being certified by the Registrar of Friendly Societies, and when once such a scheme is in existence then the employer may contract with his workmen that the provisions of the scheme may be sustituted for the provisions of the Act. There is also machinery provided in the Act by which the workmen can obtain a revocation of the scheme, but the employer must bear in

mind that the adherence of the individual workman to the scheme when in existence is solely a question of contract, and unless the workman has subscribed to the scheme or so conducted himself (as, for instance, by accepting benefits under the scheme) that a contract can be presumed from his actions, he will not be bound by the scheme and can rely on the Act.

The Unemployed Workmen Bill.

THE Unemployed Workmen Bill was read, as some of our readers may have noted, a second time in the House of Commons last week. But this proceeding was little more than an approval of the extension of the present system of poor law relief. As we all know a pauper can obtain parish relief, and in the rural districts in winter it is still allowed for unemployed workmen to obtain outdoor relief, or even to enter the workhouse—a statute to enable relief to be given to unemployed workmen is therefore not one which establishes a new principle. But the practical extension of the system of public relief is one of great difficulty. Why, for example, is the relief to be for manual labourers? Why is the typewriting clerk out of work by no fault of his own not to be provided for? Again, as the Bill at present stands, a man in order to obtain relief must be "temporarily unable" to obtain work "from exceptional causes over which he has no control." Here is a question of great difficulty. For example, A., a bricklayer, is thrifty and puts by a little money in the summer for the winter; B., is likewise a bricklayer, but spends his wages as he gets them, and in the course of a month's frost is thrown wholly out of work and becomes temporarily destitute. Why should the State provide work for the spendthrift? These and many other similar problems are raised by the Bill, and we should feel no surprise if it did not at present become law, though it will probably be the beginning of some scheme of like character in the future. But it is a question not easy of solution how to reconcile what may be termed humanitarian desires with the encouragement of thrift.

Disused Burial-Grounds.

A SOMEWHAT curious point came before the Court of Appeal in the case The Bosworth *v.* Corporation of Gravesend (June 8). The Corporation were purchasing a cemetery at Gravesend, and part of the cemetery so to be purchased was an old cemetery belonging to the Gravesend and Milton Cemetery Company, incorporated by special Act in 1838. In 1859 a predecessor of the present vendors had acquired an additional piece of land adjoining the cemetery, and in 1884 the additional piece of land had been set apart and consecrated as a burial-ground, and part of it had been so used. On August 11, 1854, under the Burial Act, 1853, an Order in Council had been made ordering that no new burial-ground should be opened without the previous approval of a Secretary of State. This approval had never been obtained as regards the addition to the cemetery, and the questions for the Court were whether, without such approval, the land could legally be used as a burial-ground, and, if not, whether that portion of it not actually used for burial could be used for building, and must be valued accordingly. The Court decided that the Burial Act, 1853, applied to an addition made to an existing burial-ground, and that therefore the addition could not be used as a burial-ground, but that the prohibition against building on disused burial-grounds in the Disused Burial-Grounds Act, 1884, applied to any land "set apart for the purposes of interment" within section 1 of the Metropolitan Open Spaces Act, 1881, were in breach of the Order in Council, and that therefore the land should not be valued as building land.

The Strength of Columns.

MANY years ago the experiments of Fairbairn & Clark demonstrated the fact that the ultimate strength of hollow tubular columns of wrought-iron depended very largely upon the resistance of the cylindrical plate to buckling. This means, of course, that a certain minimum thickness must be provided for a column of any given diameter if safety against secondary flexure is to be secured. It is easy to make the thickness such that the column shall be safe against buckling, but not so easy to hit upon the precise thickness which jointly satisfies the conditions of safety and economy. The point is an interesting one, and has been elucidated to some extent by the experiments conducted by Professor W. E. Lilly, of Dublin University. Up to the present time the investigation has been limited to round-ended columns. The results obtained are stated in a paper read before the Institution of Mechanical Engineers last week, and show clearly that the strength of the columns tested depended upon the value of the ratio r/t (ratio of gyration ÷ thickness of metal). The practical outcome of the paper is the statement of an equation, based on the Rankine formula, for the calculation of economic proportions for hollow tubular columns. As this new rule takes due account of the relative values of the radius of gyration and the thickness of metal for a given length, it marks a distinct advance, although its scope is limited to the particular class of columns examined by the author. We should be very glad if the leading engineering and architectural institutions could arrange to appoint a committee for the purpose of undertaking an inquiry into the strength of columns generally.

Concrete-Steel in Belgium.

A SHORT paper read by M. E. Noaillon before the Institution of Mechanical Engineers at Liége contains particulars relative to characteristic applications of "ferro-concrete" in Belgium. Before describing the works in question the author makes some suggestions for the guidance of the designer, who will find a useful summary of the general principles governing concrete-steel building construction in six rules drawn up by Professor Rabut. Among the typical structures described are the dome of the Gare Centrale at Antwerp, the Renommée Hall at Liége, and the La Bouverie Bridge at Liége. The dome at Antwerp, commencing at a height of 130 ft. above ground level, rises for a further height of 130 ft. to the spire. It is an example of the convenience offered by the new material, for the architects discovered that the original intention to build the dome in stone could not be carried out owing to the insufficiency of the foundations to support the weight involved by a masonry structure. This dome, however, follows the form of the original design, and, therefore, is nothing better than a sham, in the sense that the concrete pretends to be stone. The Renommée Hall, on the contrary, was designed in such manner as to give full play to the special properties of concrete-steel. M. Jaspar, the architect, set his face against the practice of employing concrete as an imitation stone, and has succeeded in producing a design which admirably displays the characteristic features of concrete-steel construction.

Christ Church Cathedral, Dublin.

IN a pamphlet on Christchurch Cathedral, Dublin, Mr. Butler draws attention to the decay which has taken place in several portions of the dressed-work of the exterior. The Caen stone, which was unfortunately chosen has, as one is not surprised to hear, proved to be unsuitable for external work, particularly in the Irish climate, and if the examples taken from the south-west doorway, and the clearstory window of the nave, and illustrated by very clear photographs, are at all typical of the general condition of the dressed-work of the exterior, its condition is, as the writer says, "lamentable." Considering the large sums spent by the late Sir Benjamin Guinness in the restoration of this interesting building, it should not be difficult to raise a sufficient sum to deal with the mischief before it extends further.

The Parish Chapel, Marylebone.

A RESTORATION is about to be effected of the tomb with obelisk in the churchyard of Charles Wesley, author of many favourite hymns and younger brother of John Wesley. There were buried also his wife, and Samuel Wesley, the composer and organist during a long period of the parish church. The chapel, originally built in 1400 by Roger de Braybrooke, to replace that of St. John the Evangelist at the south end of Marylebone-lane, Oxford-street, formed the parish church until the erection, 1813-17, of the present church, by T. Hardwick, in Marylebone-road. A tablet records the death on August 5, 1754, of James Gibbs, who in 1740-2 rebuilt the old church, to the building fund of which he bequeathed 100*l.*, and was buried in an adjoining vault. Some years ago Viscountess Ossington, a daughter of the fourth Duke of Portland, restored, at her own charges, the numerous mural tablets in the chapel which constitute an uncommon collection, most of them being distinguished by the elegance and purity of their design. The oldest two commemorate Sir Edmund Douce (1644), cupbearer to the Queens Anne of Denmark and Henrietta Maria, and members of the Forset family (1658), owners of the manor, possessed until lately by the Dukes of Portland.* Other memorials include those of James Ferguson, the astronomer, his wife, and their

* For the descent of the property, see an article in the *Builder* of December 3, 1887.

eldest son; Baretti, by T. Banks, R.A.; Caroline Watson, engraver; and Humphrey Wanley, keeper of the Harleian Library and MSS., which we are credibly informed were stored in Oxford House, in the High-street, formerly a girls' school and now Messrs. Tilbury's offices; and there are two recent tablets to several members of the house of Bentinck, buried in the family vault. In the parish chapel were baptised Lord Byron and Nelson's daughter Horatia (Mrs. Ward). Hogarth depicts the interior of the first church in the marriage scene of his Rake's Progress (1735), and the churchyard, with the Deschamps altar-tomb, in a plate of his Industry and Idleness (1747). Of the many notable interments in the adjacent burial ground we may mention those of Joseph Bonomi, architect, and John White, architect to the Duke of Portland and honorary architect, 1775, of the parish workhouse, latterly rebuilt; Francis Wheatley, R.A., Rysbrack, sculptor; Guthrie, historian; George Canning, father of the statesman; and Woelfl, composer, the pupil of Leopold Mozart and Haydn.

Harvard House, Stratford-on-Avon.

THIS interesting old house, in the High-street, has just been sold at auction for 945*l.* It was built in 1596 by Thomas and Alice Rogers, whose daughter Katharine was the mother of John Harvard, the Puritan minister, and practically the founder of the University at Cambridge in America. The front is elaborately carved, and bears the initials and date "T R 1596 A R," with roses and fleurs-de-lys, and the badges, the bull and bear, respectively, of the Neville and Beauchamp families. Thomas Rogers, alderman of Stratford, was member of a family who lived there in the XVth-XVIIth centuries. His daughter married, for her first husband, Robert Harvard, a butcher of St. Saviour's parish, Southwark. In 1607 their son was baptised in St. Saviour's church, to which Mr. Choate two or three weeks ago presented a stained-glass window in memory of John Harvard.

The Leicester Gallery.

AT the Leicester Gallery there are two interesting exhibitions of water-colours; Mr. Talbot Kelly's of Burma, and Mr. Walter Tyndale's in illustration of "Thomas Hardy's Country." Mr. Kelly expresses a hope, in the preface to the catalogue, that this collection of sketches may convey some idea how beautiful and attractive a country Burma really is. They certainly succeed in this aim; many of the landscapes are of great beauty both in composition and in colour effect. Among the best in this respect are "Waiting for the Steamer early morning" (32); "Prome—evening" (48); "The Lower Defile of the Irrawaddy" (52); "Mining Camp on the Nan-tu River" (54); "The Irrawaddy Banks, near Malé" (62). These and others bring before us vividly the character and colour of a scenery different from any of which we have seen illustrations. Mr. Kelly is also very careful in his illustrations of native architecture. He shows us, in "The Shrine at the Shwe Dagôn Pagoda, Rangoon" (25), the curious effect of the plain thick gilt columns carrying a conglomeration of carved and painted wood roofs; the "Portico of the Queen's Golden Monastery, Mandalay" (56), with its barbarous gigantic scroll ornaments; and the extraordinary collection of architectural curiosities on "The Platform of the Shwe-zi-gôn Pagoda, Pagan" (27), including a number of huge semi-globes of stone ranged in a row, the flat side upward, like a number of gigantic curling-stones. To go into the next room and look at Mr. Tyndale's Wessex sketches seems like going not merely into another country but into another planet: it affords the most extraordinary contrast between the scenery and the buildings of East and West. Mr. Tyndale's water-colours are small works, very artistic in composition and very careful and correct in regard to the buildings shown; and familiarity with some of the scenes and places enables us to realise that the representations are not only picturesque but accurate. Of the seventy-seven drawings none can be selected as of particular excellence; their merits are equal, but they are all good, and form a most interesting illustration of the scenery and houses of a district which does not require its connexion with the works of an eminent novelist to render it attractive, though readers who are familiar with Mr. Hardy's novels will no doubt find an additional interest in the views of the actual places which, under altered names, have furnished the novelist with the setting for his stories.

A Sonnet on Architecture.

THE publication this week among our illustrations of a monument to the late French Poet and Romancist, Armand Silvestre, led us to turn over his poems, and it is of some interest to find that the last thing in his latest volume of poems, "Les Aurores Lointaines," and therefore perhaps the last poem he published, is a sonnet in praise of architecture. Though many references to architecture can be found among poets, it is rare to find a sonnet specially written on the subject, so it may be worth quoting, if only by way of showing that Silvestre had some claim that his monument should be illustrated in an architectural journal:—

"SONNET DE L'ARCHITECTURE.

Celui qui, le premier, dans l'histoire, a tenté
D'enfermer le granit, dans la splendeur des lignes,
Bien qu' inconnu de nous, est parmi les plus dignes
De ceux que le temps lègue à l'Immortalité.

Par lui, le dur metal et le marbre dompté
S'assouplissent ainsi que les tiges des vignes;
Des blocs harmonieux et des formes insignes,
Il fit jaillir du sol le secret enchanté.

La Gloire des palais s'éleva dans l'espace,
Dominant, de son ombre auguste, ce qui passe,
Héritage sacré d'un art toujours vivant.

À la seule nature empruntant ses modèles,
L'architecture montre, en des reflets fidèles,
La matière ployée à l'esprit triomphant."

The suggestion in the first line of the closing triad, that architecture took its models from nature alone, is rather open to criticism, unless we take "nature" in a very wide sense; but the closing line, characterising architecture as representing matter obedient to spirit or intellect, is an admirable summing up. That is what architecture essentially is: material moulded by thought.

RECENT DISCOVERIES ON THE CÆLIAN HILL, ROME.

THE Cælian Hill appears to have been occupied in ancient times mainly by the barracks of a portion of the troops quartered in Rome—the Castra Equitum Singularium, the Castra Peregrinorum, and the barracks of the 5th cohort of the Vigiles—and by a considerable number of large private houses. Among these was the palace of the Valerii, transformed early in the Vth century into a monastery and church of S. Erasmus, situated a little way to the east-north-east of the church of S. Stefano Rotondo, itself a building of considerable interest. Many discoveries were made in the XVIth and XVIIIth centuries, particulars of which are given by Professor Lanciani in *Ruins and Excavations of Ancient Rome*, 347; and in 1902 portions of the building came to light again, the site having been selected for a large convalescent hospital. The excavations resulted in the finding of remains both of the original palace and of the later monastery, and are fully described in the *Bullettino della Commissione Archeologica Comunale* 1902, pp. 74 *sqq.*, 145 *sqq.* In 1904 the English Nursing Sisters (the Blue Nuns) commenced to build a new convent and nursing home to the south-west of the Domus Valeriorum, immediately to the south-east of S. Stefano Rotondo. The work is still in progress, but it may be interesting to give an account of the discoveries that have so far been made.

A building of considerable size and importance, belonging apparently to the IInd century A.D., and showing some traces of reconstructions and alterations, has come to light in the course of the excavations that have been made for the sinking of the foundations.

From the character of the inscriptions found, it seems not improbable that we have here a portion, at any rate, of the *Castra Peregrina*, the exact site of which has, up till now, been uncertain, though it has long been known that they stood somewhere in this neighbourhood. They were the barracks of a picked corps of soldiers detailed from the various legions for special service in the capital called *peregrini* (foreigners), who apparently acted as police and had the custody of State prisoners (St. Paul's fellow-prisoners, on their arrival in Rome, were handed over to the "princeps" (or commander) of the *peregrini*, he being allowed to live in the city under guard), and also as a kind of secret service or intelligence department, having originally, as the name *frumentarii* (which also belongs to them) implies, been employed on commissariat duties.*

We have a fragment of an inscription mentioning the *peregrini* or the *castra peregrina*, another of a dedication to Jupiter, and a third (preserved only in its impression in plaster) of an inscription of Septimius Severus, while in a semi-circular apse decorated with niches, which may have been a shrine, were found three small altars, one (without inscription) entire and about 7 in. in height, the other two broken. The former bore a dedication to Pallas in Greek, the latter an inscription recording that it was set up by Tiberius Claudius Demetrius in payment of a vow made to Mercury (?) as a *miles frumentarius* of the 15th legion, which he now fulfilled as a centurion.

A similar altar, with a fragmentary inscription, of the time of one of the Gordians, was found in the course of these excavations. The fact that all these indications of pagan worship were found in a fragmentary condition shows that they must have been destroyed on the introduction of Christianity.

Two sepulchral inscriptions were also discovered, and three interments in the virgin soil, two of them protected by tiles. It was impossible to determine the date of the latter, as the tiles bore no stamps and no coins were to be found with the bodies; but that they did not belong to a very late period is shown by the fact that one of them lay directly beneath the foundation wall of a row of white marble columns, with composite capitals, which may be assigned to the IIIrd century A.D. The columns were 10 Roman ft. in height and 1 2-5th in diameter at the bottom.

The discovery of the tombs has some topographical importance in regard to the course

* *Peregrini* is used of the whole corps collectively, *rumentarii* of its individual members.

of the Servian wall, outside which they must have lain, though it is surprising that no traces of it have been discovered either here or in the excavations made in the adjacent property in 1902.

A good mosaic pavement with geometrical designs (circles in black on a white ground) was discovered during the present year, but much damaged by frost, so that only small pieces of it could be successfully removed; a drawing of the whole was, however, made.

Among the other finds made may be noticed that of a marble head, which is derived from a Greek type of the first half of the Vth century B.C., and of a large head (about 3 ft. high) of a bearded Hercules in plaster, which was painted and gilded, and must have served for the decoration of a wall, the back of it having apparently never existed.

The brick-stamps and other small objects which have been found are carefully preserved on the spot, and the small museum which will be formed out of them will greatly add to the interest of a visit to the new hospital, which occupies one of the most beautiful sites in Rome, with an uninterrupted view towards the Alban Hills.

I must not close without expressing my thanks to Mr. Edward Descuffi for having promptly called my attention to all discoveries of any importance as they have occurred from time to time.

T. A.

LETTER FROM PARIS.

THE Government have done a wise act in purchasing the Château of the Maisons Laffitte. This fine building, designed by François Mansart, and thus saved from imminent destruction, is to become an annexe to the Louvre, and will give opportunity for the exhibition of works for which at present there is no wall-space.

The exhibition of English pictures at the Château de Bagatelle has brought in considerable receipts, which will go towards the purchase of works of art by the Municipality of Paris, forming the commencement of a collection which will probably be permanently placed in the Bagatelle Museum. The Municipal Administration are also about to complete the decoration of the Petit Palais, in which there are many exterior niches still awaiting the sculpture for which they are intended, while internally the cupola and hemi-cycles of the main gallery are to be decorated with paintings.

The collection of sculptures by Dalou, and that of the productions of the manufactory at Sèvres, now in the northern portion of the Palais des Beaux-Arts, are to be opened shortly.

At the Galliera Museum the exhibition of artistic metal-work, which continues to have great success, is to be followed by an exhibition of various applications of silk—paintings on silk, figured silks, furniture coverings, ladies' dresses, fans, etc. This exhibition will open in April next year, but will be preceded by a furniture exhibition consisting mainly of a re-arrangement of the furniture sent by eminent Parisian firms to the St. Louis Exhibition.

The enlargement of the gardens of the Louvre, which now extend up to the entrance gates of the Carrousel, is to be carried further, and the gardens are to be connected by a stone balustrade to the Arc de Triomphe, which now stands in so isolated a position. Among the flower-beds and lawns at the sides there will be fountains disposed; the whole lighted by electric light.

The Muncipal Council of Paris, which, as in former years, has made considerable purchases from the two Salons, intends to purchase, in co-operation with the Government Department of Fine-Arts, a large bas relief by M. Moncel which was exhibited in the Old Salon. The work, entitled "Rève du Poète," represents Alfred de Musset seated in a meditative attitude, while the figures representing or symbolising his works pass before him. The work is to be executed in stone and set up behind the Grand Palais on the border of the Cours la Reine. Along the same border, but in the rear of the Petit Palais, is to be erected M. Mercié's monument to Silvestre; and again, at another point in the same line, is to be erected the large monument proposed by M. Dujardin-Beaumetz in memory of great French landscape-painters—Corot, Theodore Rousseau, Millet,* Dupré, and Daubigny. To this list of proposed monuments may be added that which the Collège de France proposes to raise in its own honour. This is the work of the late M. Guillaume, and represents Francis I. writing, from the dictation of his sister Marguerite de Valois, the Act of Foundation of the Collège de France.

The Académie des Beaux-Arts has awarded to M. Laloux, the eminent architect, the prize founded by J. Jacques Berger to give a reward "for any work of art relating to the history of Paris, or serving as a decoration to the city and increasing its artistic reputation." The prize has been awarded to M. Laloux in respect of his fine building for the Orléans railway terminus. The Académie has conferred the Antoine Bailly prize, for the author of a publication on architecture, on M. Albert Ballu, for his work on the ruins of Timgad.

The celebrated Marché du Temple, erected on the site of the prison in which Louis XVI. and his family were imprisoned, has almost entirely disappeared. In its place is to be built a Municipal School of Industrial Art and a "Théâtre Populaire": this at least is the intention of the Municipal Council, which, if carried out, will be a real benefit to the cause of artisan education, much limited in its scope in the schools named after Bernard Palissy and Germain Pilon. As to the "Théâtre Populaire," it is a doubtful kind of project, often attempted but never hitherto successful, as the masses in Paris always have preferred either the music-halls or the modern drama to entertainments of classical music and literary drama.

M. Lafenestre, who has been appointed Professor of "Esthétique" at the Collège de France, has been succeeded by M. Leprieur in his former position of curator of pictures and drawings at the Louvre. M. Guadet, the architect, has succeeded the late M. Thomas in the Conseil Supèrieur of the Ecole des Beaux-Arts.

At one of its recent sittings, the Chamber of Deputies decided on the creation, at Paris, of an "Ecole Nationale des Arts et Métiers." The cost of the building and of the installation of the establishment is estimated at something over six million francs.

THE HELLENIC SOCIETY.

THE Hellenic Society held their annual meeting on Tuesday last at the rooms of the Society of Antiquaries. Sir Richard Jebb was in the chair. The Hon. Secretary, Mr. G. A. Macmillan, read the annual Report. The Society, the Report stated, wished to offer to the Crown Prince of Greece, President of the recent Archæological Congress at Athens, to Dr. P. Kavvadias, and to the Greek nation at large, their sincere felicitations on the success of that important international gathering.

In accordance with a vote of the Council, an address, written on behalf of the Society by Sir Richard Jebb, had been sent to Professor Adolf Michaelis, Director of the Institute of Art and Archæology at Strassburg, on the occasion of the celebrations attending his seventieth birthday, which fell on June 22. It was felt that this compliment was especially due from English archæologists to the author of *Ancient Marbles in Great Britain*, and one of the original honorary members of the Society. By the death, mentioned in last year's report, of Professor Ulrich Köhler, Professor of Ancient History in the University of Berlin, and at the time of the Society's foundation Director of the German Archæological Institute at Athens, the Society had lost one of its original honorary members. As this year had been signalised by the Archæological Congress at Athens, the Council propose to invite the Crown Prince of Greece, as President of the Archæological Society of Athens, to do the Society the honour of accepting the vacant place in the list of honorary members. It was also recently decided, in recognition of his long services to the Society, to create the Honorary Secretary, Mr. George Macmillan, a life member *honoris causâ*.

The Council had again granted the sum of 100*l.* to the Cretan Exploration Fund, and Mr. Arthur Evans had pursued with his usual vigour and success his investigations on the site of Cnossos. The usual grants had been made of 100*l.* to the British School at Athens and 25*l.* to the School at Rome, and in connection with the latter the Council had recently authorised the President and Honorary Secretary to sign in the name of the Society a memorial to the Treasury in favour of a grant of 500*l.* a year to the School from public funds. The sum of 25*l.* had been granted to Professor W. M. Ramsay for research in Asia Minor, and 10*l.* to Mr. Hogarth for exploration in Cyrene. In last year's Report the attention of members was drawn to the increasing difficulty, owing to the limited accommodation at Albemarle-street, of keeping the Society's library on a plan readily intelligible to students and visitors. That difficulty the Council had been able, in a measure, to obviate by the acquisition of a small adjoining room, with the result that the subject order of the books remained undisturbed, and the accommodation for students was somewhat improved. Another small improvement was that the system of classifying and binding the forty volumes of archæological tracts from the Library of the late Dr. Overbeck had been extended to the hitherto scattered pamphlets and smaller monographs. A subject catalogue of all the pamphlets would shortly be ready for use in the Library. The records showed that 375 visits were paid to the Library in the course of the year, as against 338 for the year 1903-4, and 250 for the year 1902-3.

Among members lost by death during the year, special mention was made of the Bishop of Southwell; Dr. Thomas Fowler, President of Corpus College, Oxford; Admiral Sir Erasmus Ommaney; the Rev. Augustus Austen-Leigh, Provost of King's College, Cambridge; Canon Adam Farrar, of Durham; and Mr. F. D. Mocatta, long a generous supporter of this as of many other learned societies. During the year, 118 new members had been elected, while thirty had been lost by death or resignation. The number of members at present on the list was 926, and there were in addition 162 subscribing libraries and forty honorary members. The Report tended to show that, as regards both the efficiency and the scope of its work, the session 1904-5 showed a marked improvement in the Society's position.

THE NEW TESTING STATION OF THE BRITISH FIRE PREVENTION COMMITTEE.

THE British Fire Prevention Committee was founded in 1897, and incorporated in 1899. Its first testing station was installed in 1898 at North Bank, Regent's Park, and comprised two testing chambers, each measuring 10 ft. by 10 ft., with the necessary equipment. The second testing station was erected in 1901, and was situate at Porchester-road, Bayswater, when, beyond the 10 ft. by 10 ft. huts, an additional testing chamber was erected, 22 ft. by 10 ft.

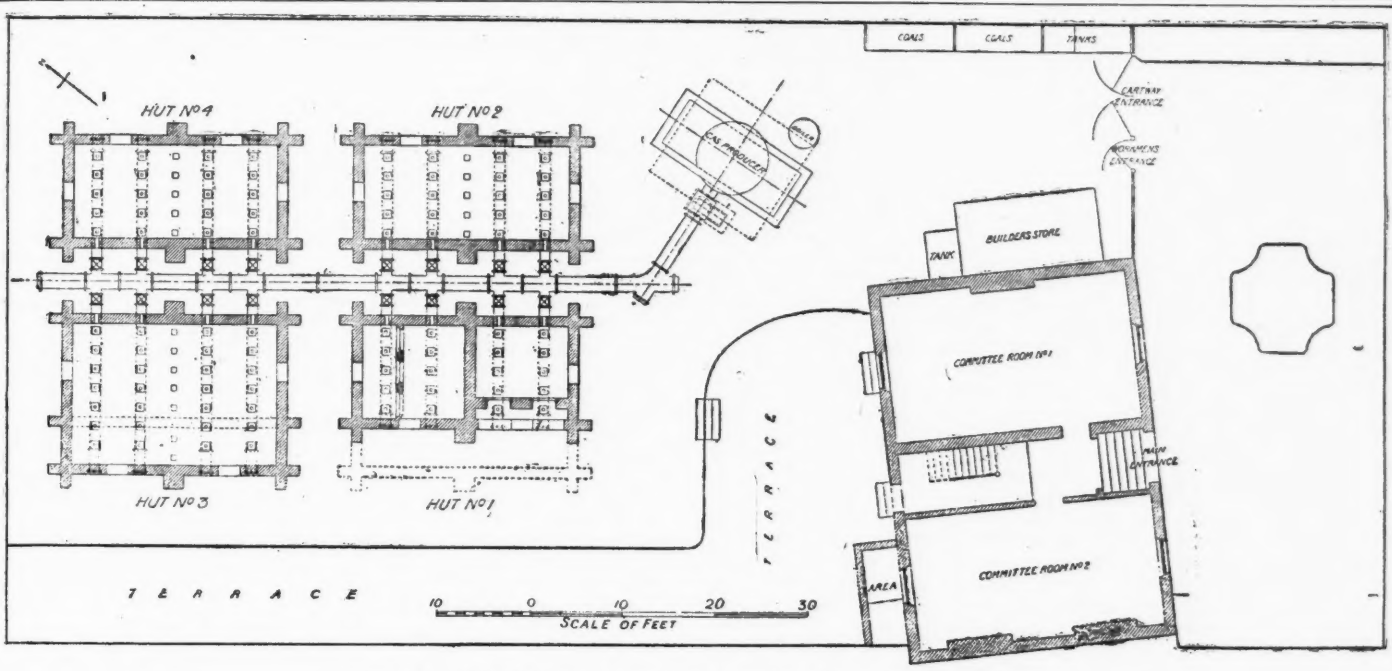
The new testing station, to be opened on June 28, is again situated in Regent's Park, at North Bank, (off Lodge-road), and is on a larger scale. Besides the usual equipment, it comprises one testing chamber, 22 ft. by 10 ft., for floor tests, one 22 ft. by 15 ft. for floor tests, and a third chamber, measuring 22 ft. by 10 ft., divisible and convertible for various purposes of partition tests, door tests, glazing tests, etc. A fourth reserve testing chamber is in course of erection, measuring 22 ft. by 10 ft.

The number of tests conducted by the Committee up to the opening of the new testing station is ninety-one. The tests for the opening day comprise a floor test of the National Fireproofing Co., of U.S.A., two door tests of the Gilmour Door Co., of Canada, and two skylight tests of Messrs. Pilkington Bros. (St. Helen's).

Plant.—The huts are laid down in two rows, their construction being explained on the plan. The materials used in their construction are stock bricks, with lime mortar. The builders were Messrs. J. D. Pitcher & Son.

The fuel generally used is gas, produced on the spot by a generator supplied by Messrs. Mason, of Manchester. The gas is conveyed from the generator by pipes to the several huts, and the supply is regulated by valves and dampers, and as the gas enters the huts from the branch pipes it is diffused by means of mixing chambers of firebrick, as shown. Each

* We confess that we do not understand how Millet comes to be included among "great French landscape-painters."—ED.



Plan of the British Fire Prevention Committee's New Testing Station.

hut has door openings, ventilation and observation holes, the doors being closed by brickwork during a test, and the ventilation holes blocked, according to requirements, by fire-brick or fire-clay. Each chamber for a floor test allows for the floor under investigation to be placed at least 8 ft. above the floor of the hut. The chambers are roofed in with galvanised iron or tarpaulin when necessary. Bricks or pig-iron are used for any loads that may be applied to floors under investigation, and water is applied from a steam fire-engine or from a manual pump, as required.

Records of temperatures are taken as far as possible by pyrometers. The instruments used are recording pyrometers designed by the late Sir William Chandler Roberts-Austen, K.C.B., F.R.S., and manufactured by Messrs. James Pitkin & Co., of London. They rely for their indications on the measurement of the current generated by thermo-junctions, which are placed in various parts of the huts. These thermo-junctions are connected by insulated wires to the recording instruments, and the temperature at any point can be recorded or observed at any instant of time. The metals composing the thermo-junctions may be varied with circumstances, but in the majority of cases the platinum irridium junction, as used by Professor Tate in 1873, is adopted. These thermo-junctions give accurate indications of temperature up to 3,000 deg. Fahr., which is considerably higher than has so far been required at the testing station. Kew standard thermometers are also used for low temperatures.

Visual observations as to work under investigation are also recorded, as far as possible, by photography. Deflections are measured by level and staff, or by weights and pulleys. There is a supplementary equipment available for any necessary laboratory tests with fire preventive, fire alarm, and fire-extinguishing appliances, such as thermostats, sprinklers, etc. Similarly arrangements have been made for conducting special tests with lamps, stoves, electrical apparatus, etc. The necessary electrical energy or hydraulic power for special tests is obtained from the Central Electric Supply Co.'s generating station.

Fire tests with materials and systems of construction and appliances used in ordinary practice, and not subject to proprietary rights, are undertaken from time to time by the executive, as the limited resources of the Committee permit. Considerable importance is attached to such investigations by the executive, as the information available regarding the efficiency of the more common forms of fire-preventive building construction and appliances is most incomplete.

Parties interested in fire-resisting materials, systems of construction, or appliances, can apply for tests, subject to a scale of charges which varies according to the subject put forward for investigation and the preparations necessary. These charges are intended to cover in part or whole the expenses incurred upon the tests.

Thus work subject to proprietary rights can come before the Committee for review, and inventors, manufacturers, and others are given an opportunity of obtaining official reports as to the efficiency of their specialities at or below the cost involved in such investigations.

In all cases, whether the tests be with preparatory work or not, the actual skilled conduct and supervision of the tests, as also the preparation of the reports by the members, is undertaken voluntarily, no fees of any kind, or even out-of-pocket expenses, being paid to the members of the Committee for any such services.

Sir William Preece, as senior member of the Council of the British Fire Prevention Committee, started on Wednesday the first test at the new Testing Station, when various systems of floor construction, doors, and fire-resisting glazing were under investigation. There was a large attendance of public officials during the afternoon, including several representatives of foreign authorities. In his opening address Sir William Preece specially remarked upon the necessity of the municipal authorities aiding the voluntary efforts of the Committee in the investigation of fire-preventive questions.

THE INCORPORATED INSTITUTE OF HEATING AND VENTILATING ENGINEERS.

THE summer meeting of the Incorporated Institute of Heating and Ventilating Engineers was held on the 20th ult. in Bristol. Members attended from various parts of the country, and a drive round the Downs and thence over the Suspension Bridge to Ashton Court was planned for the morning, a visit being paid to Redcliff Church on the return journey. At Redcliff Mr. J. T. Francombe received the party, and guided them round the church. In the afternoon the members assembled in the Royal Hotel to hear papers read and transact business connected with the Institute, and Mr. George Crispin, President, occupied the chair. The President mentioned that there were twenty-two new members and associates to be submitted to the meeting, and, the list having been read through, the names were approved.

The President then gave a hearty welcome to the whole of the members and friends to Bristol.

Heating of Buildings and Dust-Prevention.

Professor W. F. Barrett, F.R.S., M.I.E. (hon. member), had prepared a paper on the heating of buildings and on dust deposition, and in his absence it was read by Mr. Kenyon. Professor Barrett spoke of the educational aspects of the question. He urged that scientific and technical training should begin with the professional classes and employers of labour, and work downward to the artisan. Greatly to our injury, he said, this process, so successful in Germany, was reversed in our own country; we have established technical schools, chiefly evening instruction, for the working classes, whilst in our public schools and in our Universities scientific and technical teaching, if not altogether neglected, has been most inadequate, until quite recently. Happily a great change has come about in recent years, and in the large and well-equipped colleges which now exist in so many of our large cities the paramount claims of scientific training are fully recognised. Proceeding to discuss some of the scientific aspects of heating and ventilating, the lecturer mentioned that all heating appliances depend upon the transference of heat from some source to the parts of the building it is intended to warm. This transfer can, he continued, be effected in three ways: by the slow process of conduction, by the quicker process of convection, or by the swift process of radiation. In the case of hot-water pipes all three processes are at work; the heat is conducted through the iron pipes, which warm the room both by radiation and convection. In the case of an open fire, radiation is practically the only agent by which the heat is distributed to the persons in and to the walls of the room. As the air is almost as transparent to radiant heat as it is to light, the air of a room cannot be warmed by radiation, and hence our domestic open fire-grates warm the room indirectly by heating the floor, walls, and furniture, and these, absorbing the radiant heat, warm the air by convection. This latter process consists in the transfer of heat by moving masses of the warmed air or other fluid, the motive force being gravity, the colder denser air displacing the lighter warm air. These currents are the means by which all fluids are heated, as both gases and liquids are extremely bad conductors of heat. Professor Barrett's paper then touched on his own experiments. A few years ago a make-shift method of warming a small room was introduced. The ordinary glass globe was removed, and the flame surrounded by an enamelled iron globe, closed at the top. Curious as it might seem, better heating was effected in the lower parts of the room by this arrangement, without increased consumption of gas, the naked flame wasting its heat in the layers of air near the ceiling. The system, of course, vitiated the air by the products of combustion. Discussing systems of warming large public buildings, Professor Barrett said no adequate explanation had been found for the fact that in buildings mechanically ventilated by driving in warmed air a lack of freshness was produced. The advantages and disadvantages of the "Plenum" system of ventilation having received attention, the writer suggested that brief contributions recording their experience from members of the Institution who had had considerable practical acquaintance of the working of various systems of heating and ventilation would be of the very greatest scientific value. Even a few lines of reply to a printed form of questions sent out by the Secretary, if answered by those who

had no axe to grind, would be of great value. It is much to be regretted that they had so little exact knowledge of the best system of heating and ventilating large buildings. As regards steam heating, he remarked that one disadvantage was that no heating occurred until the water in the boilers was actually generating steam, whereas with a hot-water system warming began directly the heat was applied to the boiler. He found those who had experience of different systems generally preferred hot-water circulation, independently of the ease with which it could be controlled. The heating of hot-water radiators by injecting high-pressure steam into the system seemed to him one of the simplest and best ways of transmitting heat throughout a building. Ideally, of course, electric heating would be the best, as the electric current could be conveyed with the least possible loss throughout any building, and then by traversing suitable resistance coils the current could be made to generate heat in any room and at any moment by merely turning a switch. But at present this system was impracticable, except as a luxury, owing to the cost of electricity. In the neighbourhood of a waterfall, however, the utilisation of the energy of the fall and its transformation into electricity—and thence to heat—would be a practical project. When there was waste steam, at, say, 40 lb. to 50 lb. pressure, coming from a boiler used for power purposes, nothing could be more economical nor simpler than to utilise this steam for the transmission of heat by injecting it into a hot-water system whenever needed. Properly jacketed steam pipes were used in America to convey heat and power to remote distances, and he did not know why the method of heating by steam injected into a water system had not become more general; the circulation of the water was accelerated by the steam jet, and the regulation of the heat was perfectly under the control by simply turning the steam jet on or off. In systems where the air was warmed the walls were cooler, and became more rapidly covered with dust than where the heating was by the radiation of heat from a fire. In the latter case the air was the cooler, and the walls remained cleaner. This was notably seen in the difference between wall-papers in rooms heated by stoves and open fires. Those where the stove was used became dirtier, and this was not due, as some supposed, to leakage from the stove. The same thing might be noticed where hot-water pipes ran along the wall; near the pipes the wall was blackened. An objection had been raised to radiators owing to this tendency, and it became a matter of great importance to try and ascertain the cause of this, and, if possible, find a remedy. The general result of experiments showed that the invariable tendency was for fine dust particles to be driven away from warm surfaces, and to deposit themselves on any neighbouring cold surface.

The paper provoked a good deal of discussion, several of the points it raised being subject to criticism, as well as approval. Mr. J. Buley (London) attributed the deposit of dust to the vortex of air created by a heated surface. He quoted the case of ceilings blackened by incandescent gas burners, which he referred to as the filthiest of all means of illuminating a house. He urged that engineers should keep their radiators sufficiently far from walls to allow an air current to flow between. Other members spoke for and against the use of steam by injecting it into a water-circulating system for heating purposes.

Professor Ferrier, of the Bristol University College, remarked that he could not pose as an expert with regard to any particular system, and he could only claim to have had the ordinary experience of suffering from various systems. At one building he had experience of lecturing in competition with the steam hammer caused by injecting steam into water-pipes, as suggested in the paper, and it was trying to one's temper.

The President then presented to Mr. Geo. Chasser, Stourbridge, a cheque for £10 10s., being the first prize in the assistants' competition, for a paper on "Hot-water Supply by Indirect Heating."

Mr. O. M. Row next read a paper on "Steam Economy in Connexion with the Heating Trade." The argument of the writer was in favour of the low water pressure hot-water system, in which temperature was secured and maintained by calorifiers, through which the water constantly circulated. This paper was also fully discussed.

It was decided to hold the next meeting of the Institution in London, on October 17.

In the evening the members dined at the Royal Hotel. The toast of "The King" having been honoured,

Professor Ferrier submitted the toast of "The Institution of Heating and Ventilating Engineers." Experience was a valuable thing, but it was also true that, if they were to cope with the problems that arose in the future, they must be trained and educated so that they might approach them in a different way to the rule of thumb method customary in the days of their forefathers. Experience of the past would be of little use unless they learned what to avoid as well as what to copy.

The President, in reply, said they sincerely trusted that before many years elapsed a number of professors at the various Universities and colleges of the United Kingdom would more carefully consider the matter of heating and ventilating. They hoped these gentlemen would give them the benefit of their scientific research as their American cousins had received from Professors Carpenter and Kencally, who had devoted an enormous amount of time and thought to the study of hygiene, more especially as regarded heating and ventilation, and the whole world had benefited thereby.

Professor Lloyd Morgan gave the health of the "Past Presidents," and Mr. J. Palmer replied. Mr. D. M. Nesbit, who also responded, referred to the neglect in the past to make their public buildings habitable, and said he was glad there had been a radical change in regard to that matter. Mr. W. Jones, also speaking in reply to the toast, congratulated the President on a record meeting of the Institution. Other toasts followed.

The following day the members and their friends, at the invitation of the President, joined in an excursion to Blagdon, Burrington Coombe, and Cheddar.—Abstracted from a report which appeared in the *Western Daily Press*.

THE INCORPORATED BRITISH INSTITUTE OF CERTIFIED CARPENTERS.

THE annual dinner of this Institute was held on Saturday, June 24, in the Duke's Room, Holborn Restaurant. Mr. John Willson, J.P., President, occupied the chair, supported by Messrs. E. M. Eagles, M.A.; J. Hutton Freeman, Clerk to the Carpenters' Company; J. Inkpen, hon treasurer; W. E. Cutter, late secretary, and others.

The toast of "The King" having been honoured,

Mr. Eagles proposed the toast of the evening, "The Incorporated British Institute of Certified Carpenters," coupled with the name of the Chairman. The membership of the Institute totalled 139, exclusive of the honorary members, and the financial position was satisfactory, there being a good balance in hand.

The Chairman, in response, said he was pleased to know that the Institute was flourishing and that they were increasing in numbers. They would be glad to know that at the examinations held by the Carpenters' Company the previous week there were fifty candidates, of whom forty-eight succeeded in passing, which he thought was a record percentage. The examination was quite as strict as on any previous occasion, and he believed that every man who passed was a fit and proper man to receive a certificate. He hoped that the majority of those who had passed would join the Institute. He noticed in the *Journal* of the Institute that an alteration had been made in the qualification for membership. Formerly it was a *sine quâ non* that members should hold the certificate of the Carpenters' Company, and he was not sure that the alteration was not a wise one, for any change that would tend to enlarge the circle of the Institute was a good one, if made with circumspection. As to the examinations of the Carpenters' Company, the examiners were all men of practical knowledge. In the case of building construction, if a man's knowledge was derived entirely from books he was hardly qualified to be an examiner, for which work practical knowledge was absolutely necessary, and that knowledge was possessed by the examiners of the Company, and he hoped they would remember that, and realise that the Company would not grant their certificate to incompetent men. He was told the other day that carpenters' work was becoming a thing of the past. He did not agree with that, and he did not think that steel work was going to oust the carpenter. The craft of carpentering was the oldest in the world, and he thought it could still maintain its position as a great craft. He hoped that future legislation would permit wooden houses to be put up in rural districts. That would be a great boon to the rural population, for farm labourers and others would be better housed if in timber counties wooden buildings were allowed to be erected, and these buildings could be made warm and comfortable and picturesque; they knew this was so, judging from some of the old wooden buildings which existed in most towns in the country, but which, alas! scarcely exist in London. He hoped that in the wisdom of Parliament and the various local authorities, permission would be granted to erect wooden houses in country and comparatively isolated districts.

Mr. G. Ayres, hon. secretary, then proposed the toast of "The Worshipful Company of Carpenters," and in doing so he said that the Institute was a very young body, being instituted in 1890, whereas the Carpenters' Company dated back to the beginning of the XIVth century. Anyone who had studied the history of the Company and other companies would find that the object with which they were started was mutual improvement, and he might say that was the object with which the Institute met from month to month. The Carpenters' Company had been well to the front in doing the work for which it was originally founded, and, judging from the men connected with it, they would, no doubt, do all they could for the craft. The examinations of the Company were second to none in importance to their trade in the United Kingdom, and they embraced almost every subject in the craft of carpentry and joinery. He did not believe much in examinations as examinations, but the amount of work a candidate got through in the preparation for the examination was of great value to him; he might add that all those present that evening had passed the examination of the Company. It was a pity that the certificates granted by the Company were not more generally recognised. The employers of labour did not understand what the certificate meant, for, if they did, they would appreciate it more, and also the men who had gone to the trouble of obtaining it. As to the exhibition of woodwork and joinery now being held by the Company at Carpenters' Hall, its object was to improve the craftsmanship of the present day, and it was another good work the Company was doing. It was said that the craftsmanship of the present day was inferior to that of the XVIth and XVIIth centuries, but he did not agree with that, for there were as fine craftsmen now as then; but, unfortunately, they were not appreciated now as they were then. A man who now did a job for a builder generally had to turn out the work in the quickest time, and he was compelled against his wish to do inferior work. What was wanted was an improvement in public taste, and especially that public bodies should insist on good craftsmanship; they insisted on good drains, but they did not insist on the same standard of excellence for carpenters' and joiners' work. A well-finished architrave or door might not be necessary for health, but he hoped we had sufficient æsthetic feeling to desire that our houses should be artistic as well as healthy, and he hoped the Company would not, in the course of their other work, lose sight of this side of the question—*i.e.*, that public taste needs educating as much as did the craftsman. Craftsmen could do as good work now as in the past if they had the opportunity of doing so. As to the exhibition to which he had referred, he desired to say a word about the granting of medals by the Company. Prizes and medals were given to young craftsmen who had done small pieces of work without any originality—for ordinary centre or kingpost or queenpost roof trusses, such as had been made for a hundred years. Any amateur could turn out some of the pieces of work for which prizes had been awarded at the exhibition, and he did not think the work was a test of craftsmanship. There was a great difference

between making a tenon ⅛ in. long and ⅛ in. thick to making it 7 in. or 8 in. long and ½ in. thick. Young men were not helped by giving them medals for this sort of work; it would be better to give money or books. The Institute was much indebted to the Company, especially for allowing them to meet from time to time in their beautiful hall. But for the Company they would not be in existence, nor could they exist without their help. With the toast he coupled the name of the Chairman, a past Master of the Carpenters' Company.

The Chairman said that for the greater part of their existence they were a comparatively poor Company, and it was not until quiet recently that they had come into anything like a substantial income. Since that time they had endeavoured to foster the trade of carpentry and kindred trades. They were educating a large number of apprentices and workmen at their training school in Great Titchfield-street, and he believed they were doing a good and useful work there, and also by their examinations in carpentry and joinery and in sanitary construction. The value attaching to the certificate was rather more than some of them thought. Only the other day a carpenter and joiner came from Scotland expressly to try and obtain the certificate, and if a man did that there must be some value attaching to the examination. Within the last two or three years a candidate came from Hong Kong for the purpose, and there were a good many other examples of this kind, and he could not help thinking that considerable advantage attached to the possession of the certificate. As to the exhibition now being held at Carpenters' Hall, the Company were not the judges. The judges included men like Mr. John Belcher, A.R.A., one of the best of present-day architects, and Mr. Belcher did not seem to think that the exhibits were insignificant; on the contrary, he expressed great admiration for them. Though the exhibits were small, there were some excellent specimens of workmanship there, especially hammer-beam roofs, which were a credit to any joiner, medallist or not. The Company placed themselves in the hands of the judges, and these judges said whether a medal or prize was to be given or not. The judges included such men as Mr. Frampton and Mr. Goscombe John, who greatly admired the carving. The Company were pursuing their work in connexion with carpentry and the building trade in their earnest desire to do what they can for the trade. The Company also helped those members of the craft who had fallen into decay, and they had a long list of pensioners. In conclusion, the Chairman said he had a pleasing duty to perform, and that was to present, as a mark of good-fellowship and esteem, a purse to their late secretary, Mr. Cutter, who, after four years of good service on their behalf, retired, to the great regret of every member of the Institute. It was largely in consequence of Mr. Cutter's exertions that a charter of incorporation was obtained. An address would also be presented to Mr. Cutter on another occasion.

Mr. Cutter briefly replied, and thanked them for their gift. A great deal that had been done on behalf of the Institute was the work of the treasurer, the honorary members, and others.

The concluding toasts were "The Honorary Members," proposed by Mr. J. D. Macnair, and acknowledged by Mr. J. Hutton Freeman, and "The Chairman," proposed by Mr. W. J. Collins.

PAINT MANUFACTURE.—A report by Dr. T. M. Legge, Medical Inspector of Factories, on the subject of the manufacture of paints and colours containing lead, as affecting the health of the operatives employed, just issued by the Home Office, states that existing special rules for processes in the manufacture of paints and colours have been in operation since 1892, and are in need of revision. By far the greater number of cases of plumbism arise in occupations in which dust is raised in the mixing and grinding of white lead. This source of danger the existing rules do little to remove or diminish. The chief centres of the paint and colour industry are East and South London, Liverpool, Glasgow, Hull, Manchester, and Birmingham. Between January 1, 1899, and June 30, 1904, the number of attacks reported was 252 males, 17 females, these cases occurring in 70 out of a total of 318 works. Dr. Legge gives tables showing that of the total cases 7·29 per cent. are due to the absorption of lead in the form of dust (mainly of white lead).

THE ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

THE annual meeting of the Association of Municipal and County Engineers was opened in the Technical Institute, Norwich, on Thursday, June 22. The retiring President (Mr. A. T. Davis, County Surveyor of Shropshire) presided at the opening proceedings, and among those present were:—Mr. A. E. Collins (City Engineer of Norwich), President-elect; C. Jones (Ealing), J. P. Barber (Islington), I. W. A. Hayward (Battersea), J. Lemon (Southampton), J. T. Eayrs (Birmingham), J. S. Pickering (Cheltenham), J. Folland (Westminster), J. P. Norrington (London), J. P. Spencer (Newcastle-on-Tyne), J. Lobley (Hanley), G. W. Stacey (Oswestry), A. D. Greatorex (West Bromwich), W. F. Loveday (Stoke Newington), C. Chambers Smith (Sutton), H. Richardson (Handsworth), W. Weaver (Kensington), O. Winter (Hampstead), and others.

The Mayor heartily welcomed the Association to their ancient and historic city, and said of the many Associations which had visited the city none had been more welcome than the Municipal Engineers, who represented science, skill, and modern conditions of progressive England.

Rural By-laws.

Mr. T. Cole, Secretary, read the annual report of the Council, which stated that the total membership was 1,143. During the year the special Committee appointed to consider building by-laws had held twenty-two meetings, and had presented an exhaustive report to the Council recommending various amendments to the model by-laws for urban and rural districts issued by the Local Government Board. In considering this question, the Committee had particularly in view the desirability of removing certain restrictions in the by-laws in order to allow of the cheaper construction of buildings, particularly with regard to dwellings for the working classes both in urban and rural districts, and in suggesting such amendments they had carefully kept in mind the necessary stability security against fire and the sanitary arrangements of the buildings.

The report was adopted, and the Honorary District Secretaries re-elected. Messrs. Hayward (Battersea), Winter (Hampstead), Shaw (Ilford), and Harris (Tonbridge) were elected Scrutineers; and Messrs. MacBrair (Lincoln) and Stallard (Oxford), Auditors.

President's Address.

Mr. A. E. Collins, having been installed as President, delivered his inaugural address. He said his connexion with municipal engineering was co-equal with the life of that Association. In his third of a century of service he had seen great changes in public work. The growing town in which he served his articles had a population of some 60,000, yet the professional work of the Borough Engineer's office was done by the Borough Engineer and three pupils, there being no paid assistants. Probably this was representative of the small volume of work passing through most municipal offices in those days—quiet days never likely to recur for municipal engineers. Since those days constant additions to the statutes they had to administer, the gradual abolition of the contractor, and continuously growing demands by the public for greater convenience, healthiness, and beauty in connexion with all public works had enormously increased their duties, and to-day their volume and variety was so great that a town of 60,000 inhabitants, to ensure the proper prosecution of its public works, must provide its engineer with a considerable and varied expert staff. Their work was of such a wearing, anxious, and absorbing character that more than any class of officers they should be relieved by the public they served from as much anxiety as possible, and it was for the public advantage, at least, as much as their own, that such should be the case. Borough and County Engineers, and engineers holding similar appointments under local authorities generally, were more liable to earn dislike in properly carrying out their duties than any other officers of such authorities, and cases often occurred where enmities made by the performance of duty had caused the driving from office of some of the best members of their profession. A man whose position was endangered by enmities caused by the proper performance of work and duties was not so free to serve the public properly as he would be were he efficiently protected. The Local Government Board, the central authority to which so much of their work was subject, had not given the position of municipal engineers the consideration it required and deserved. It appeared, in fact, that they were purposely placed in an unfair position by the Board whenever it was possible to do so. For instance, many consents of the Board to local authorities to raise loans for works designed and carried out by municipal engineers had been conditional upon these engineers receiving no payment from the loan. At the same time, payments were authorised to town clerks whose work relative to the matters in question was not a tithe that of the engineers. Further, it was not prohibited to make loans to engineers in private practice. Municipal engineering was a living, growing profession, having to do, consequently, with ever-changing practice. For a municipal engineer to keep pace with his profession, and to give the best service to his authority, he must constantly inspect and study the newest developments, and their Association arranged visits of inspection to municipal works of all sorts to aid its members in this; yet the Local Government Board required its auditors to surcharge payments by local authorities of expenses to their members in attending their meetings. This action of the Board, more than anything else in his knowledge, showed the necessity for their Association to make most careful and searching survey of its position relatively to municipal engineers. It is necessary to local authorities for their engineers to have the fullest knowledge of the progress of municipal engineering. At the same time, it was unfair and unjust for their engineers, mostly an underpaid class, to be out of pocket in obtaining such knowledge for the benefit of their authorities. Again, the Local Government Board, when appointing inspecting engineers, whose chief duties were to hold inquiries and report on work done by municipal engineers, should endeavour to fill vacancies from the ranks of municipal engineers. It was rarely, however, that such was done. He believed it would be to the advantage of the public generally if municipal engineers of ability and experience were appointed to such positions, and if they could look forward to occupying such positions as the reward of good service. The Local Government Board could greatly help local authorities, the public, and municipal engineers by obtaining authority from Parliament for, and requiring that none of their appointments be held by other than competent, properly-paid men, and by protecting such men when appointed from improper dismissal. Further, the Local Government Board should itself promote legislation ensuring superannuation to engineers, town clerks, and other officials of local authorities now omitted from superannuation schemes. The Association of Municipal and County Engineers had done great preparatory work towards enabling the Local Government Board to insist on none but competent persons being appointed as municipal engineers. One of the most important matters for their discussion was that of new streets and building by-laws—a subject which had for a long period been under the very serious attention of their Council, aided by the able and painstaking Sub-Committee to whom this subject was referred. Whilst he would not anticipate the paper and discussion on this subject, he desired to express the hope that, as the result thereof, they might greatly help toward showing how pleasant, comfortable, sanitary, safe, and durable houses might be erected at less cost than was possible under the by-laws now generally in force.

Mr. Barber (Islington), in moving a vote of thanks to the President for his address, complimented him upon the courage he had shown in speaking out so boldly, and expressed the hope that the Local Government Board would give some consideration to the views Mr. Collins had expressed.

Mr. A. D. Greatorex (West Bromwich) seconded the vote of thanks, which was unanimously passed.

Building By-laws.

Mr. A. D. Greatorex, Assoc.M.Inst.C.E. (Borough Engineer and Surveyor, West Bromwich), read a paper entitled "Suggested Amendments to the Model-Building By-laws for New Streets and Buildings." He said for the past eighteen months a special Committee appointed by the Council had been considering this important subject. As a result of their labours, a report was submitted, together with certain amendments and suggestions, to the Local Government Board's Code. This report was considered and approved at a special meeting of the Council, and had been submitted to the Board, who were giving the subject their attention, and it was to be hoped that the labours of the Committee would not have been in vain. The author, having carried out the duties of Hon. Secretary, it naturally followed that many of the suggestions contained in this paper were the opinions of the Committee, and, in placing them before the members, he did so with the sanction of his colleagues.

In considering this question the Committee had particularly in mind the following objects :—

1. To ascertain whether the existing by-laws could be modified so as to lessen the restrictions which were said to exist in such a way as not to affect the stability and safety of buildings both in urban and rural districts, at the same time securing that the laws of public health might be adhered to.

2. Whether such modifications would make it possible to reduce the cost of the erection of buildings, more especially for the artisan class.

3. If any, and which, by-laws could be altered with advantage to the general public.

The By-law Committee, after careful consideration, had come to the conclusion that modification could be made without in any way endangering any of the above principles, and had offered to the Local Government Board many suggestions on these lines for their consideration.

The author suggested various additions and amendments to the existing model-building by-laws for both urban and rural districts. At the present time most by-laws required buildings to be of brick, stone, or other incombustible material.

In order to allow of buildings being constructed of other suitable materials than brick or stone, under certain conditions, a by-law providing for the external walls being constructed of suitable material of adequate strength to secure proper stability, and constructed to be weather-proof should be included. This would, to a very large degree, remove, especially in rural districts the present outcry against the cost of building, and would allow of half-timbered buildings, buildings of wood and corrugated iron, reinforced concrete, and other forms of construction. After careful consideration the Committee adopted the following recommendations :—

That the minimum width of streets for urban districts should be as follows :—(a) 40 ft. for side streets, (b) 50 ft. for more important streets, (c) 60 ft. for streets that are main lines of communication or in continuation with same. In rural districts no street should be less in width than 36 ft., and all main lines of communication should be 25 ft. from the centre of the road to the forecourt wall.

Narrow roads, whether in urban or rural distrcts, were a mistake, a great inconvenience, and a source of danger to the public, especially under the present conditions of traffic.

By-law 22.—As to the thickness of walls of domestic buildings. The principle appeared to be that walls of domestic buildings less than 25 ft. high and 30 ft. long must be 9 in. thick throughout; that if either the height or length was increased, the thickness of the walls must accordingly be increased as set forth.

As general rules, the provisions of the by-laws did not appear to be unreasonable, but in practice the application to cottage property sometimes presented difficulties in respect to party and gable walls as regarded height and length as fixing the thickness.

The difficulties experienced might be very much reduced if the by-law was amended so as to allow of domestic buildings being erected up to 30 ft. in height and 30 ft. length, with 9-in. walls; this would allow of three-story buildings.

There was also the question whether some concession might not safely be made in respect to permitting the external walls of sculleries, wash-houses, closets, tool-houses, or ash-places appurtenant to a domestic building, to be erected only 4½ in. thick instead of 9 in. as required by this by-law, provided these walls were built with cement mortar, and subject to certain restrictions, such as the size of such buildings, etc., and provided that the foundations and party walls were constructed of 9-in. brickwork. This amendment would, in the opinion of the author, be a concession of some value in the erection of cottage property.

With respect to the sufficiency of space about buildings to secure a circulation of air and with respect to ventilation of buildings, By-law 53 should be improved by the addition of the following proviso :—

"Provided that where a scullery, not exceeding 10 ft. 6 in. in height, measured from the floor of such scullery to halfway up the roof, is erected at the back of such dwelling-house, he may cause the distance across open space between such scullery and the said boundary to be one-fifth less than the distance as prescribed, if thereby no diminution of the minimum aggregate extent of 150 sq. ft. is involved. Provided, also, that any scullery to be so erected shall not be allowed to extend across the back of such building to an extent of more than three-fifths the width of any habitable room to which such scullery is attached, and provided, also, that such scullery shall leave sufficient light and ventilation for any habitation."

By-law 67.—The word "earth-closet" should be left out, same as in rural by-laws, and the clause amended, so that water-closets should not open directly into any room wholly or partly used for human habitation, or as a place of habitual employment for any person in any manufacture, trade, or business.

After an extensive examination of the many papers which have been written on the subject, the author suggested that the present building by-laws should be remodelled or a universal Building Act adopted, which should be compulsory, and power should be given to each district, subject to the sanction of the Local Government Board, to frame regulations as to the minimum size and strength of material to be used in the construction of buildings, drainage, and other particulars.

They should be concise, deal consecutively with the various subjects, follow the same order in which they usually had to be dealt with in building operations, be provided with a full index, marginal notes, explanatory illustrations, and diagrams.

In framing these regulations greater latitude should be given to each district, making them vary, according to the requirements of each particular district. They would not then be so cumbersome and unnecessarily lengthy.

At the same time, definite rules should be laid down, as it would be dangerous to make them too elastic, or they would not be properly enforced.

It would, no doubt, be necessary, in order to provide for some of the by-laws both for urban and rural districts, for the Local Government Board to obtain further powers.

Power might also be given to charge fees for the supervision of all buildings on the same lines as was done in London under the Buildings Acts and several other towns under private Acts.

In the recent discussions that had taken place it had been suggested that the Institute of British Architects and the Surveyors' Institution could frame such a code of by-laws as would be acceptable to the Local Government Board, the architects, building owners, and the general public.

The author was of opinion that, in the event of experts being asked for further suggestions for the proposed Building Act or amended by-laws, the members of that Association should be consulted in a matter in which they were so deeply interested.

[Our report of the proceedings of the Association will be concluded next week.]

FIRE PROTECTION IN LONDON.

ON Thursday last week Capt. Hamilton concluded his evidence before the Committee of the House of Commons which has under consideration the London Building Act Amendment Bill and the Bill promoted by the City Corporation.

In the course of his re-examination Capt. Hamilton said that he considered the provisions of the Bill to be most important, and was of opinion that their operation should not be deferred.

Capt. Hemphill, Chairman of the Fire Brigade Committee of the London County Council, was then called. He said that the Bill had received due consideration at the hands of his Committee. He repudiated the suggestion that the London County Council had ever tried to starve the Fire Brigade. In cross-examination witness said that he would be prepared to allow the exemption of buildings from the provisions of the Bill where the buildings were not occupied by more than two families. He would also exempt banks where not more than a fourth of the building was used for residential purposes. Further, he would extend the height clause to 30 ft., if it was thought desirable.

On Friday, witness having concluded his evidence, Mr. W. E. Riley, the Architect to the London County Council, was re-called, and cross-examined at some length as to two buildings in the City—at Redcross-street and Moor-lane—where, it was alleged, alterations in the means of escape from fire of a far less costly character than those originally stipulated by the London County Council were allowed on appeal. Witness admitted that the cost of the alterations had been reduced.

On Monday Mr. Pembroke Stephens, K.C., addressed the Committee on behalf of the opposition of the Royal Institute of British Architects. He said that the Council of that Institute felt that they were acting under a certain responsibility in opposing the measure, as the Legislature had placed upon them the appointing of one of the members of the Tribunal of Appeal, to which any case under the Building Act was referred. The Bill, he contended, was really a Bill of one character, of one idea. Its provisions had been framed with no regard for any special kinds of buildings, but had simply been framed and applied to the whole of London. There was no proposal to have any departmental control, or even any judicial control, except so far as arbitration was concerned. One great difficulty had been to understand what the Bill meant, and he thought that it was evident that the Council did not intend that it should be understood. There was no limitation in the Bill as to the amount of the expenditure which the Council could order a property owner to make. Everything was left to the discretion of the Council. Were the Council skilled experts in building? He admitted the ability of Capt. Hemphill, but he was only a member of the Committee. The Council were really "high-class amateurs," and it was not enough for them to say "we require that certain alterations shall be carried out." The Bill was supposed to deal with the question of saving life from fire, but it really only dealt with the question of construction. Counsel went on to argue that what was wanted was an improvement in the Fire Brigade in the direction of better ladders and escapes. The first duty of a fire brigade was to save life, and for that purpose they should have very much longer ladders than those possessed by the London Fire Brigade. The Council had long ladders, 70-ft. ladders, but they were used for fire-fighting purposes. His contention was that if one of those 70-ft. ladders was strong enough to hold several men and a hose charged with water, it was strong enough to allow of its use for life-saving purposes. He considered that the reason why the London County Council did not have longer ladders, better and larger engines, and more modern apparatus was want of money. He thought that there should be no finality when it came to the question of expenditure on a fire brigade, and the fact that in London and its suburbs 4,500 new houses and 16 miles of streets were added every year made it all the more necessary for the London brigade to be as efficient as possible. He asked the Committee to reject the preamble of the Bill.

Mr. Castle, K.C., on behalf of the District Surveyors' Association, then called Mr.

Thomas Henry Watson, F.R.I.B.A., District Surveyor of St. George's, Hanover-square, President of the District Surveyors' Association, who said that Association had about fifty members, and explained the manner in which district surveyors dealt with irregularities under the Building Act. He considered that the provisions of the Bill before the Committee were "vague and uncertain," and that the independence of the district surveyors should be maintained.

On Wednesday Mr. Bernard J. Dicksee, District Surveyor for Stoke Newington, gave evidence on behalf of the District Surveyors' Association, and expressed the opinion that, quite apart from the fact of district surveyors being ousted from the jurisdiction they now enjoyed, the very mode of procedure contemplated by the Bill could only be productive of very serious delays. It was desirable that definite rules and by-laws should be issued by the County Council for the guidance alike of district surveyors and architects, for then every person before he commenced to build would know precisely what he had to comply with. He saw no reason why the duties which the district surveyors were now called upon to fulfil should be taken away and handed over to clerical officers in the employ of the County Council.

In cross-examination witness said that if the preamble of the Bill was passed his Association would be willing to assist in making the Bill a workable measure.

Mr. Castle addressed the Committee on behalf of the District Surveyors' Association, and asked the Committee to determine before passing the preamble whether or not the suggestions made by the Home Secretary ought to be embodied either in by-laws or in rules.

Mr. Baggallay, K.C., on behalf of the City companies, addressed the Committee with reference to the Corporation Bill for Protection from Fire. He suggested that there was no urgency for dealing with the question of fire apart from the whole subject of the building laws of the Metropolis. The companies considered that legislation should be uniform.

Mr. Moon, K.C., opened the case for the Surveyors' Institution, and remarked that his clients were ready to assist both the Committee and the County Council. What they wished was to have an effective piece of legislation passed, but they were of opinion that the preamble ought not to pass now. His clients considered that the matter should be deferred and further considered, so that a workable measure might be put forward. The Bill of the County Council as now before the Committee simply dealt with the elimination of the risks of fire, but he contended that all matters connected wth the building laws should be dealt with together. The three considerations which he submitted the Committee had to bear in mind in arriving at a conclusion were, firstly, the necessity; secondly, the extent of interference; and, thirdly, the cost, and in connexion with the last matter he directed attention to the fact that Capt. Hemphill, the Chairman of the London County Council Building Act Committee, had stated that his Committee had not gone into the matter at all. He suggested that the Committee should throw out both of the Bills this session, and that next session the matter might be considered by a Select Committee, and a good and practical Bill might be the outcome.

Mr. A. R. Stenning, architect and surveyor, gave evidence on behalf of the Surveyors' Institution, and said that he was strongly of opinion that the question of fire prevention and escape ought not to be dealt with separately, but should be included in the general Bill which the County Council proposed to introduce in the future to deal with the whole subject of the building law of London. The Council of his Institution was quite willing to co-operate with the County Council in the framing of such a Bill, and, in fact, they considered it their duty to do so. All they wanted was to see the matter dealt with in a practical manner.

Mr. J. G. Talbot addressed the Committee on behalf of the Improved Industrial Dwellings Co., and contended that experience had shown that these buildings were exceptionally safe from fire risks.

A number of witnesses were called, including Mr. W. E. Wallis, Architect and Surveyor to the Peabody Trust, who said that under the Bill the Trust would be called upon to make a large and altogether unnecessary outlay on alterations. He considered that buildings of this description should be exempt altogether from the operations of the Act.

ARCHITECTURAL SOCIETIES.

DURHAM AND NORTHUMBERLAND ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—The Architectural and Archæological Society of Durham and Northumberland visited Ford and Etal recently. The party assembled at Beal Station, and drove by way of Lowick to the village of Ford, where they were met by the Rev. H. M. Neville, who conducted the party over the school, where the frescoes by Lady Waterford were inspected. The party next proceeded to the castle, which, by permission of the present tenant, Mr. J. Fletcher Mossop, they were privileged to view. The rector, in the course of a short sketch, traced the descent of the property, and continued:—Of the very ancient history of Ford Castle little is known. It was, no doubt, the residence of the De Ford family and its early Heron owners as a manor house. In the time of the second Heron, Sir William (in 1338), it became a castle and fortress for the defence of the English border. Probably all the building that has come down from that time is the large square tower to the north-west, and the small detached tower called the Cow Tower rising from the western wall of the court, and having an outside gallery round its upper story. The original entrance to the castle was between this small tower and the one which is now called the King's Tower. The western entrance was called "the common passage into the castle," and distinct traces of the ancient road leading to this entrance may now be seen in a deep depression extending westward in the direction of the river Till, which passes through the lower part of Ford village, and the only vestige of which is a disused well, still known to many as the "Smiddy Well." A few years before Flodden (in 1509) the castle was supposed to be capable of keeping a garrison of forty horsemen. The large tower at the north-west angle is by tradition connected with the name of James IV. of Scotland, probably because it is the largest part of what remains of the early English building, and from the fact that he took possession of the castle and made a short stay of a few days there. The castle was repaired in 1541, but again burnt in 1549 by the Scots. It was bravely defended by Thomas Carr, of Wark, who afterwards married Elizabeth Heron, heiress of Ford. The Carrs retained the property till about 1685. The Delavals made important changes to the castle, but the general shape of the south front was much the same as at present. Lord Delaval died in 1808, and his widow resided at the castle until her death in 1822, when it passed to the Waterford family, its present owners. The greatest alteration of the castle, and that which was a nearer approach to restoration, was the work of Louisa Ann, widow of the third Marquess of Waterford. She left it as it now appears. Proceeding to the church, the rector gave an account of the building. Of the origin of Ford Church, he said, there seems to be no written record. There are, however, stones found in and about the church with Norman cutting, which make it probable that there was a church here in Norman times. The ancient portions of the building are early English, and consist of the western end, with its peculiar tower and belfry and south-western buttress, and the whole of the foundation of the nave and chancel, except the north aisle, which was added when the church was restored some sixty years ago. There is a XIVth century buttress at the south-east corner of the south aisle, with deep niches. Before the restoration of the church the principal entrance was through a porch in the west end, south of the tower. The belfry is pierced in two stories, with lancet arches—in the lower story these arches open north and south as well as east and west. It is evident that the arches were intended to contain three bells, as remains of the stone corbels may still be seen just within the arches from the east side. There is a curious narrow lancet window at the west end, and much splayed within. The pillars and arcades on the south are ancient. There seem to have been two chantries in the church, one dedicated to the Blessed Virgin Mary, and founded by a member of the De Ford family, and the other dedicated to St. Margaret, probably Margaret Queen of Scotland, and wife of Malcolm Canmore, whose influence as a saint prevailed widely over this part of the country. On the east of the wall of the south aisle is a piscina, which probably indicates the position of one of these chantries. Among the carved stones found in and about the church are two coped grave covers with tile ornamentation. One of these was for a long time lying outside the church; the other, in two pieces, had been used as building stone low down in the foundation of the chancel, built in endways. He remembered that under those grave covers when removed from the wall were found several oyster shells, which it seems difficult to account for. The carving on one side of the stones is very clear and fine, but on the other much worn, apparently by the weather, so that it would seem that those Norman stones were very old before they were built into the foundations. The church is long, and rises with seven steps from the nave to the altar. Before the restoration the entrance into it was very small, but he had been unable to ascertain what sort of arch it had. There was a priest's door about the middle of the south wall of the chancel. To the north-west of the church there is the ruin of a massive tower, 35 ft. square, which was the pre-Reformation dwelling of the rector of Ford.—The ruins of Etal Castle, one of the castles destroyed by James IV. of Scotland, were afterwards visited, as well as a small pele tower at Duddo. The members then drove to Berwick, where they dined together, and subsequently dispersed.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The concluding meeting of the session was held on Wednesday, the 21st ult., Mr. C. H. Compton, Vice-President, in the chair. Mr. Patrick, hon. secretary, communicated a discovery of much interest recently made by Don Enrique Salas in excavating on land belonging to him in the province of Murcia, in Spain. The discovery consists of thirty-one objects, in red and black clay, of the Celtiberian period. A careful drawing of one of the subjects on a cinerary urn, in red colour, was submitted as a specimen of the nature of the find. This represented two warriors, one on foot with shield and dart, the other on horseback with a dart, while a third is lying on the ground pierced, seemingly, with a dart. Dr. Birch remarked at some length upon the interesting nature of the discovery, and Dr. H. J. D. Astley considered the illustration showed evidence of Mycenæan civilisation. These interesting objects have been deposited, temporarily, by the owner in the National Archæological Museum of Madrid. A paper was read by the Rev. Dr. Astley on the 9th Iter of Antoniuus, with special reference to the sites of Sitomagus and Venta Icenorum. This was a carefully reasoned argument in favour of the views of the older antiquaries, as Camden and Sir Thomas Browne, that Caistor and Thetford are the true sites of Venta Icenorum and Sitomagus, in opposition to modern theories, which assign to Norwich and Dunwich that identification. Although the latter theory is ably supported by the learned antiquary, Dr. Raven, with great skill and labour, he, the author, contended that it was improbable and untenable with reference to the Itinerary of Antoninus and the Tabula Peutingeriana. The Tabula Peutingeriana is a copy made in the XIIIth century of the only Roman map of the Imperial epoch that has come down to us. It derives its name from Conrad Peutinger, of Augsburg, who possessed it in the XVIth century, and it is now preserved in the Imperial Library of Vienna. On the original map of the Roman Empire the British section is, unfortunately, imperfect, the section to the west and north of Ad Taum being missing, and Venta Icenorum does not appear. We must, therefore, look for Venta Icenorum, the chief centre and emporium of trade, the market of the Iceni in Roman times, in a locality where everything will prove its importance during the period of the Roman

occupation, and nowhere is there a more fitting situation than that of Caistor, with its mighty camp and remains of Roman residences in its neighbourhood. In like manner Thetford also provides just the site that the Romans would fix upon for a station, and, taking the data of the Itinerary and the Tabula together, the conclusion appears to be irresistible that Thetford is the true site of Sitomagus. Mr. Emanuel Green, Mr. Gould, Dr. Birch, the Chairman, and others joined in the discussion following the paper. Mr. Gould drew attention to the newspaper reports of Mr. Edward Wooler's discovery of an early camp or defensive inclosure in the county of Durham, and said that he was especially glad to do so, as the discovery was the result of a suggestion he had made to Mr. Wooler that a work would be found on the spot. Mr. Gould had noticed an embankment, shown on Maclauchlan's survey of the Watling Street, published in the middle of the last century, and judged that it, probably, extended across a promontory otherwise naturally defended by streams. This surmise was found to be correct, and there is little doubt that an early fortress or stronghold of the promontory type existed. Mr. Wooler's investigations show that probably at some late period the southern portion of the great area was further defended by banks, thus forming a complete inclosure. The site is at the extreme west of the parish of Brancepeth. Mr. S. W. Kershaw drew attention to an exhibition which is to be held at St. Albans from June 27 to July 15, at which lectures will be given and precious MSS. and rare objects of great interest will be on view in illustration of the history of the Church in the British Isles from the earliest times.

Correspondence.

TREATMENT OF SEWAGE.

SIR,—In comparing the way of disposing of sewage by the "septic tank" process with the simple way that nature teaches us as to dealing with excrement and any foul matter—vegetable or animal—we may learn a lesson.

1. The first part of the "septic" process is to separate the rough refuse and to collect the sewage into a tank till it has undergone a certain measure of putrefactive change, so reducing the organic matter into a liquid state fit to be oxidised. This first change is effected by pathogenic organisms, known as anaërobic, cultivated in the tank, which is necessary for the second part of the process—the purifying or oxidising—brought about by another class of organisms, known as aërobic in coke or clinker filters, thereby effecting nitrification and rendering it fit to be discharged as a harmless effluent into a stream, river, or into the sea, and so getting rid of it altogether.

This process puts the anaërobic before the aërobic action. It is called natural or biological. It is, however, only the old cesspool system brought out with an addition and a new name. The filtering of the overflow of the cesspit is never attempted. It is often in some way utilised in its crude state on the face of the ground by sewage cart irrigation or left to soak away. That from the septic tank is in measure purified, and usually is got rid of as waste water into some river.

2. The order of nature is to deposit all filth or foul matter in the earth at once to be oxidised by a different order of organisms to those in the septic tank, and in this way at once it is assimilated, in order to supply other vegetable organisms for the use of man, and so purification and utilisation are very simply effected. The process then for dealing with sewage that can effect this, according to natural law, by straining, settling, and filtering where we find the aërobic organisms thrive—providing them a suitable bed for growth and increase—must be the right mode of treatment, at any rate for large houses and mansions in the country. From smaller houses it can be returned into the garden at once without any special provision for collection and purification, which should be with a minimum of labour in collection with dry earth, without smell, and without the aid of mechanism or chemicals. The liquid discharged is a pure effluent, passing through aërobic and anaërobic beds—the latter chiefly mechanical for clarifying and removing all inorganic deposit.

In this way of nature the aërobic microbe with oxygen is the chief factor. The anaërobic is little engaged, and few of these micro-organisms are found below a foot or two from the surface in ordinary earth. A few inches of soil are enough to cover the solids. No putrefactive change, either of solid, liquid, or gaseous elements, can take place when covered with earth. All mineral or hard rubbish is otherwise disposed of. Any sewage is in its proper place if deposited in the ground. The spade and plough will do all that is required beside. The manurial gain is most important for ferro-culture of every kind, wherever man's habitation is, except in cities and towns where nature's ways are set at naught and this invaluable provision of no worth. I quote a few remarks by a chemical authority:—"Looked at in this light, the aërobic beds are artificial gardens or farms where the only living thing grown consists of minute organisms, which, like cells in general, while in a state of growth or division, require oxygen, in order that an increase in their substance may take place. . . In country districts it would be more economical to dispose of sewage *in soil where these aërobic organisms are*, and by growing plants which may be used as food for man and beast, than by growing those minute organisms which are only indirectly beneficial to either."

It is strange how slowly this perfect way of nature is apprehended and acted upon. We conserve strongly what has been handed down to us. Septic tanks are now taking the place of the old deadly ashpits—being a change without a difference, except that they are watertight and continuously and automatically discharging—in measure purified—into running water. Consumptive hospitals in the country are having these septic tanks constructed, where the bacillus tuberculosis and other pathogenic organisms are cultivated, when they profess they are "stamping them out." Is it not healing with one hand and courting disease with the other? These tanks are not air-tight, and who can be sure where these deadly germs are carried? There is no occasion for such a dangerous and wasteful process in the country. The putrefactive gases in them are explosive and must be dangerous with such elements as sulphur, phosphorus, and nitrogenous compounds.

The simple way of dealing with sewage is more economical in the first cost, as well as in the working of the installation. It is more effective, and is free from anything hazardous or inodorous. In fact, it pays itself, as I lately calculated for a large college, that the manure gained by the process would pay 10 per cent. on the outlay, and many have proved this who have adopted it. Yet they preferred the septic waste process. We seem so bound to go with the stream that we are willing often to spend large sums on what we afterwards find to be a mistake, which is constantly done.

ALFRED S. GOODRIDGE, A.R.I.B.A.

WESLEYAN HALL COMPETITION.

SIR,—Whilst thanking you for the kind way in which you refer to our design in last week's issue of the *Builder*, we should like to reply on one or two points.

We did not send alternative plans, as you will see by the supplementary report (enclosed). The drawings marked A 1 were modifications and improvements on the original design in the first competition. The drawings marked A 2 illustrate a scheme based on exactly the same principle in which the large hall is placed on the first floor. This was done to meet the wish of the trustees, as explained in the conditions of the final competition. In both cases seating accommodation was provided for over 2,500 people. (You will find this clearly explained on sections.)

We provided a central cloak-room on the *ground floor* (we agree with you it should be there) immediately facing the main entrance and between the two main staircases. The lavatories (for public) were placed in a mezzanine below.

We can also say that no part of the plan was sacrificed for architectural effect, as all the scheduled sizes of the various rooms and offices were given as approximately required, and many of them in excess.

C. E. MALLOWS.
A. W. S. CROSS.

*** We looked carefully at the sections in combination with the plans, in regard to the amount of seating; we could not make out that number; however, as Messrs. Mallows & Cross say they are there, we have no doubt they are.—ED.

SIR,—I should be much obliged if you would correct an error made in the criticism of my plans for the above.

The tea-meeting halls in basement have each domed top lights 27 ft. diameter, and the borrowed lights, which are stated "as showing through the ladies' cloak-rooms" are high up near the ceiling. The statements are a little misleading.

JAMES A. SWAN.

*** We did not overlook the domed top lights, but they are in one corner of each large room, and would not give much light to the further portion of the room. Borrowed lights are always a doubtful subterfuge in planning.—ED.

MEMORIAL TO DR. TEMPLE, RUGBY.—A tablet portrait in marble and alabaster of the late Archbishop of Canterbury was recently unveiled at Rugby School. The memorial was executed by Mr. Thomas Brock, R.A.

Illustrations.

MONUMENT TO ARMAND SILVESTRE.

THIS monument, which is the work of the eminent French sculptor M. Mercié, was perhaps the most poetic and original piece of sculpture in the Paris Salon of this year.

One may suppose that the design, in which graceful figures in relief circulate round a broken column, was intended to symbolise the character of Silvestre's poetry—a succession of gracefully expressed fancies, but usually with a background of melancholy.

COMPETITION DESIGN FOR WESLEYAN HALL, WESTMINSTER.

THE illustration shows the joint design of Mr. C. E. Mallows and Mr. A. W. S. Cross, submitted in the second Wesleyan Hall competition.

The plan is a variation from that in the original design, in order to meet what we now understand is the wish of the Trustees, that the large hall should be on the first floor. It is in our opinion the best position for it, but nothing was said of such a wish in the Instructions for the Sketch Competition, which merely emphasised the wish that the hall should be "easily accessible from the street."

The authors have adopted as their dominant idea that the great hall should be on the geometrical centre of the site. The small hall, library, and reading-room are very well and effectively grouped *en suite* on the east side of the ground floor. The second floor contains twelve departmental offices and an orchestra-room, and cloakroom accommodation for both offices and orchestra. On the third floor there are nineteen offices for letting, and on the fourth floor fifteen, the remainder of the latter floor being utilised for residential accommodation for the secretary and caretaker. The large tea-rooms required in the scheme are of course in the basement.

Ventilation was proposed to be on the plenum system, with filtered warm air admitted to the various rooms at about 7 ft. above the floor level, and the foul air extracted at the floor level.

The authors' estimate of the cost of the design as now worked out, with the great hall on the first floor, is 146,412*l*.

The exterior design, as shown in the very fine perspective drawing, speaks for itself.

ILLUSTRATIONS OF BAALBEK.

THE photographs of the circular temple at Baalbek, as existing, and of the *disjecta membra* of part of the Temple of Jupiter, are from photographs lent by Mr. Spiers, and are given in connexion with his article in the present issue. The second-named one should however have been more correctly entitled fragments of the cornice of the *cella*.

The drawing of the restoration of the circular temple, otherwise called the Temple of Venus, shows Mr. Spiers's restoration of the building, and is explained in his article.

PUBLIC SCHOOL, ABERDEEN.—A new public school is being erected in Victoria-road, Aberdeen. The main access to the building runs north and south, the two front entrances from Victoria-road leading into a central corridor, 14 ft. wide and 115 ft. long. The building is two stories high. Alongside the corridor, which runs along the centre of both floors, there are arranged three classrooms on each side on both floors, with a cookery and laundry room in addition, library, teachers' rooms, and pupils' cloakrooms. The woodwork will be chiefly of yellow pine, stained and varnished. The corridors and staircases will have glazed tile dados, and the staircases will be fireproof, of granolithic. The frontage will be of hammer-blocked and snecked ashlar, with fair picked dressings. The building will be lit by electricity and heated by steam from a Cornish boiler. Accommodation is provided for 714 children. The cost will be about 8,700*l*. The contractors for the work are as follows:—Mason work, Messrs. Alexander Milne & Sons; carpenter work, Messrs. Hendry & Keith; slater work, Mr. J. M. M'Donald; plasterer work and granolithic stairs, Messrs. Sellar & Co.; plumber work, Messrs. Thom & Strachan; painter and glazier work, Messrs. George Donald & Sons; and steam boiler, Messrs. W. M'Kinnon & Co., all of Aberdeen. The school was designed by Mr. J. A. O. Allan, Architect to the Aberdeen School Board, and the work is being carried out under the supervision of the architectural department.

COMPETITIONS.

ISLINGTON CENTRAL LIBRARY.—Islington Borough Council has accepted the design of Mr. H. T. Hare for the Central Public Library to be erected in Holloway-road. Eight designs were submitted, which the assessor, Mr. J. Belcher, A.R.A., described as excellent. The problem for the competitors was a difficult one, he reported, owing to the irregular nature of the site and the accommodation required. The various solutions shown by the plans received were admirable, but, after a most careful examination of each, he had no hesitation in placing first the design marked No. 6 (Mr. Hare's). This design provided, in a simple and effective manner a scheme which, he believed, would be found satisfactory in practice. The elevations also represent a building suitable to its purpose. The departments are well arranged, and the whole building well lighted. Mr. Hare (whose design some time ago for the North Islington Branch Library was accepted) thus describes his design for the Central Library :—"The principal considerations kept in view have been easy and direct supervision in all parts, adequate lighting, and economy. The entrance, staircase, and corridors have been concentrated as much as possible, but are, nevertheless, adequate for free and perfect circulation. The author feels strongly that the setting back of the frontage to Holloway-road behind the line of the adjoining buildings is unfortunate, and will greatly detract from the effect of the building. The frontages are proposed to be faced entirely with Portland stone, and the roofs covered with green slates; the whole of the construction, including the roofs, to be fireproof. The walls of the entrance hall, etc., to be lined with Hopton wood stone; general reading-room to have a dado of Hopton wood, and the upper part to be lined with a light marble; the juvenile-room to have a tiled dado; the floors of the reading and juvenile rooms to be covered with cork linoleum, wax polished, and of the lecture-room and reference library of wainscot in narrow widths, secret nailed. The whole of the joinery to be wainscot, slightly wax polished. The heating is proposed to be effected by low-pressure hot water, with ventilating radiators fixed in the various rooms and corridors. Extraction is provided from the principal rooms by a trunk over the entrance corridor connected to an electric fan fixed in a chamber over the main staircase. With this is also connected the reference library and large lecture-room."

SCHOOLS, HIGH WYCOMBE.—Sixteen sets of designs were received in competition for secondary education schools, and the design finally selected was under the motto "Sunshine." "Lux" was placed second, and "Progress" third. The following are the names and addresses :—"Sunshine," Mr. Arthur T. Greenwood, "Highfield," Gorton, Manchester; "Lux," Mr. C. Harold Norton, 14, Bedford-row, London, W.C.; "Progress," Mr. Frank W. Mee, F.R.I.B.A., 32, Victoria-street, Manchester.

THE HARROGATE INFIRMARY.—For an extension of the Harrogate Infirmary twelve local architects sent in designs to meet the requirements. Mr. George Bertram Bulmer, F.R.I.B.A., of Leeds, the assessor appointed by the committee, has sent in his adjudication to the committee, and has awarded the first premium to Messrs H. E. and A. Bown, of Harrogate; second, Messrs. Bolshaw & Steevens, Harrogate; third, Mr. T. E. Marshall, Harrogate. The committee awarded premiums of 25*l.*, 15*l.*, and 10*l.* for the best designs. The Building Committee have approved of the assessor's award. With the exception of two slight additions, the work will be carried out on the north side of the existing building, and will be in keeping with the present structure. The principal features of the extension will be the provision of a large waiting-room, 40 ft. by 22 ft.; a new operating theatre, with an anæsthetic-room attached, with stores and lavatories, etc., and isolated from the main portion of the building. There will also be a ward on the first floor, 58 ft. by 26 ft. In addition, the number of beds in the Infirmary will be increased from forty to fifty-eight, and a number of additional staff bedrooms will be provided near the operating theatre, and on the same floor level as the existing staff bedroom. The cost of the proposed extension will be between 4,000*l.* and 5,000*l.*

CHURCH, TREFRIW.—In a limited competition for a new Welsh C.M. Church at Trefriw, North Wales, the committee have selected the design submitted by Mr. G. Dickens-Lewis, architect, Shrewsbury. The work, which is estimated to cost 3,500*l.*, is to be proceeded with immediately.

HOUSING SCHEME, GUILDFORD.—At the meeting of the Guildford Town Council held on the 20th ult., it was decided to award Mr. T. J. Capp the first premium of 20*l.* for his plans in connexion with this competition. The other competitors were Mr. A. J. Sturges and Messrs. Clemence and Moon.

Books.

The Rock Tombs of El Amarna. By N. DE G. DAVIES. London: Egypt Exploration Fund.
Ehnasya. By W. M. FLINDERS PETRIE. London: Egypt Exploration Fund.
Roman Ehnasya. By W. M. FLINDERS PETRIE. London: Egypt Exploration Fund.

THE latest volumes issued by the Egypt Exploration Fund are of exceptional interest. Mr. Davies, working for the Archæological Survey, has continued his work of describing and copying the rock-cut tombs of El Amarna, the town built by Akhenaten (Amenophis IV.) of the XVIIIth Dynasty to form the centre of the Monotheistic worship of the Sun's disc, or *Aten*. The ruins are almost entirely of one period, as at the death of the King the country reverted to its national religion and returned to Thebes as the capital. El Amarna was deserted, but appears after many centuries to have become a resort of the Copts, who found comfortable homes in its tombs and places of refuge in its inaccessible cliffs. The group of tombs described by Mr. Davies are those cut in the cliff at the north of the town. Many of these are unfinished and uninscribed. The architects and artists of the period would be quite unable to satisfy the demands of the courtiers owing to the immense amount of building and decoration that was carried out in the few years of Akhenaten's reign, and only a few great officials were fortunate enough to have the designs for their tombs carried out with any completeness. The unfinished condition of the tombs renders it easy to see how the work of excavation was accomplished. In one case wide vertical grooves were cut, and the intervening mass broken away. Another shaft has a deep circular trench cut in the floor, to be treated in the same manner.

Two large and elaborate tombs are described in detail—those of Panehesy and Meryra, high officials of Akhenaten. That of Panehesy consists of three chambers—a square hall, intended for the use of the family and friends of the deceased; a second chamber with a stairway leading down to the place of burial; and beyond that a smaller room or shrine, intended for the private apartment of the deceased, which originally contained his statue. The hall had two rows of two columns each. These columns represent eight bundles of papyrus worked out in complicated detail and brilliantly coloured. The capitals are of papyrus-bud form. The excavated columns are of bulky proportions, and differ considerably in this respect from those built by the Egyptians. The walls and ceilings were elaborately painted and inscribed. The burial chamber is of almost the same size as the hall, and contains four columns, but the walls are left plain.

The tomb of Meryra also consists of three chambers. The first is smaller than the hall of Panehesy, and contains only two columns, which, happily, remain intact, and which support architraves running parallel to the axis of the tomb. The ceiling between them is slightly arched and higher than at the sides. The inner chamber is of a narrow corridor type, running transversely to the entrance hall; the shrine beyond is left entirely rough and unfinished. Both these tombs have suffered greatly in recent years from wilful damage, and also from colonies of bats, which have almost obliterated the sculptures of the upper parts of the walls. Panehesy's entrance hall was utilised by the Copts as a Christian church. They cut an apse and otherwise enlarged the hall, but contented themselves for the most part with merely painting Christian symbols over the pagan representations; they have, however, left an unwelcome legacy of grey plaster on one wall.

The inscriptions in the tombs include praises of Queen Nefertiti and hymns and prayers to the *Aten*. The pictured scenes show the peculiar style of the reign of Akhenaten. Unable to throw off all the traditions of Egyptian art, the artist has yet managed to do so to a great extent. Of these scenes some depict Akhenaten and Queen Nefertiti with their family and court worshipping the *Aten*, presenting food offerings, or burning incense, and attended in some instances by female dwarfs. Others show the King rewarding his faithful servant Panehesy, and there is a very lively representation of the royal family driving out in chariots with a numerous escort. There is a visit of the Royal family to the temple, which is shown in such detail that Mr. Davies has been able to reconstruct from it the plan of the building, aided by very similar representations in other tombs and by the actual ruins remaining at El Amarna, and to realise the use for which the various courts were intended. Another important scene shows the King receiving tribute from foreigners, among which are Ethiopians bringing gold in profusion, and Asiatics, Amorites, and Hittites, who also bring precious metals and, among other objects, vases of the now well known Cretan form.

The details of these scenes afford subjects for study in many directions. The redundant ornamentation, such as sashes with flapping ends round the columns, is irritating. The carved work on the buildings depicted is so elaborate that the originals must probably have been of wood, of which no specimen has survived.

Mr. Davies devotes a chapter to the general conditions of the site, the traces of roads made by Akhenaten, and the occupation of the place by the Copts, but the main interest of the book undoubtedly lies in the new details he has acquired with regard to the very remarkable plans of the building depicted in the tombs, which he has been able to identify with the Temple of Akhenaten. This new material Mr. Davies has worked out with great care, in order to arrive at the disposition of the building; and this he has accomplished with the same success with which in his previous volume, "El Amarna I.," he identified and worked out the details of the palace.

Turning from El Amarna to Ehnasya, we find ourselves on ground which has been occupied from the earliest historical times. Heracleopolis Magna, now the Arab village of Ehnasyeh (Ahnas), was in ancient times the head of a nome and chief seat of the worship of Hershef, a ram-headed god. It is now a mass of mounds covering ruins and the remains of a temple of the XIXth Dynasty, which was excavated a few years ago and found to contain some traces of earlier work. On this somewhat unpromising site Professor Petrie settled down for the winter of 1903-4. By digging below the known ruins and examining both floor and foundation levels, he succeeded in finding remains of two distinct temples earlier than that of Rameses II. of the XIXth Dynasty, and also to some extent in reconstructing their plans. Although there is no doubt that there was a temple at Ahnas as early as the first dynasty, there is now no trace of it. At the lowest level examined Dr. Petrie found private houses built of brick of the XIth Dynasty, among which were some burials. Here also were scarabs of importance for dating the kings of that very doubtful period. The houses were abandoned apparently, and the site taken over by the Pharaohs of the XIIth Dynasty for their temple, a compact block of buildings with a large forecourt. The massive foundations still remain, and also several blocks of red granite, inscribed with the name of the King. Some fine palm-leaf columns in granite, usurped by Rameses II. and inscribed with his name are also probably of this date. These have been carefully photographed and can be seen in detail. During the XVIIIth Dynasty a later temple rose on this site very much on the old plan, but larger. Finally, Rameses II. rebuilt the whole, appropriating, as we have seen, the fine work and materials of his predecessors. His foundations are very unstable, and do not compare with those of the Middle Kingdom. The large court in front of the temple owed much to him. He set up colossi, and also, in red granite a triad of himself between the gods Ptah and Hershef. This triad, 95 in. in height, is now at the Cairo Museum.

There are signs in the temple of two periods of rebuilding after the time of Rameses, and probably additions were added as late as the reign of Antoninus. A remarkable feature of this rebuilding was the placing of drums of white quartzite sandstone under the monolith columns of the portico. The most sensational find of the season was the discovery of a beautifully-worked statuette in gold of the god Hershef, dedicated by King *Pef du Bast* of the XXIIIth Dynasty.

The mass of mounds surrounding the temple contain ruins of Roman, Coptic, and Arab houses. The Roman houses were turned over by Dr. Petrie, who gives plans of them. Here, with other things, he found an immense number of Roman lamps. These he has worked through and divided into types; in Roman Ehnasya seventeen photographic plates are devoted to them.

Among the mass of facts and deductions brought forward by Dr. Petrie, he remarks on the close resemblance between the treatment of foliage on capitals of the Roman period found at Ehnasya and those at Ravenna. He also traces the form of the lock of Horus in the crook-like appendage at the top of the cross that appears on the capitals of Theodoric's palace. It is difficult to accept this identification without further proof, but from it Dr. Petrie argues the influence of Egypt on the sculpture of Ravenna.

These volumes are illustrated by a large number of plates, which render the plans and details of the buildings perfectly clear.

Building Materials: Their Nature, Properties, and Manufacture. A Text-book for Students and others. By G. A. T. MIDDLETON, A.R.I.B.A. London: B. T. Batsford. 1905.

AMONG the subjects entering into the curriculum of architectural students, none is more necessary than that embodied in the latest text-book by Mr. Middleton. Recognising the premier position occupied by mineral products, such as stone, concrete, and brick, the author lays a sound basis for the addition of further knowledge by two introductory chapters, one on the geological formation in which building materials occur, and the other on the elements of chemistry and physics. By the aid of these the student may be enabled to follow the classification and distinctive properties of various building stones, but his study of geology, chemistry, and physics should be carried far beyond the limits of the elementary precepts here communicated.

Building stones of various classes are considered at some length in seven succeeding chapters, which contain some very complete tables, giving full particulars relative to the chief quarries of the British Isles, and deserve recognition as a series of records compiled with great care and general accuracy. We notice, however, that the author does not appear to be quite *au courant* with the most recent developments of stone-working machinery. As an instance of this, we may point out the suggestion on p. 64 that "Straight mouldings, if started by hand, as shown in Fig. 24, can be cut by machine on a travelling table under narrow plane irons, but on curves they have to be worked laboriously by chisel and mallet, as must all carving and sculpture." Now, as a matter of fact, it happens that more than one machine is on the market perfectly capable of starting and finishing any straight moulding, without preliminary hand treatment, on the hardest stones obtainable; also that circular discs can be moulded by machine; and, again, that automatic carving and sculpturing machines have been in operation for some time. One other omission is that no mention whatever is made of Welsh jasper, a very fine stone recently made available for building purposes by the development of modern stone-working machinery. Chapter X. is entitled "Bitumen and Asphalt," which seems to imply a difference between these materials, and in the body of the chapter Trinidad asphalt is mentioned in one place as "bitumen" and another as "pitch." For the sake of perspicuity, it would be better if the author had made it clear that while bitumen and asphalt are synonymous terms, the latter is customarily applied as a courtesy title to the natural compound of limestone and bitumen, or asphalt, found in Switzerland, France, and other countries. Another point with regard to this chapter is that asphalt, although a building material, is not a primary essential to pure construction, and for this reason ought not to have been placed between stone on one hand and concrete and brick on the other. A more appropriate place would be towards the end of the volume, where miscellaneous substances are discussed. The same criticism applies to the notes on whitewash and putty in the succeeding chapter. The former of these useful compounds clearly belongs to the same category as distemper, which is dealt with at the end of the book, and the latter to Chapter XLV., on "Sundry Materials of Lesser Importance." In this connexion we observe that, in spite of the prominence given to putty as a building material, the author has not included it in the index. Cements, lime, mortar, plaster, concrete, and artificial stone are the subjects of a series of consecutive chapters which leave little to be desired. The next four chapters describe the principal varieties of brick and tile and the methods adopted in modern brick manufacture, the letterpress being illustrated with a number of excellent drawings. A short chapter on "Artificial Bricks and Miscellaneous Walling Substances" does not completely cover the subject indicated. The first part of the title involves the suggestion that some bricks are not artificial, and is really intended to describe special types, such as concrete, slag, glass, and other special bricks. Concrete bricks are mentioned, but not the hollow concrete blocks now so extensively used in the United States and elsewhere. As partition slabs are made in great variety by numerous firms, the selection of two individual examples for illustration seems to be a little invidious.

Considering the large field covered by the book, no one will expect to find in it an exhaustive treatment of every subject discussed, but it is certainly the fact that an immense amount of most useful knowledge is conveyed in a manner that will render the work of great assistance to all students of building construction.

Twenty-six Graduated Exercises in Graphic Statics, with an Essay on Graphical Statics. By T. ALEXANDER, M.Inst.C.E.I., and A. W. THOMSON, D.Sc., C.E. London: Macmillan & Co. 1905.

WE feel sure that students who possess the standard work on "Elementary Applied Mechanics," by Messrs. Alexander & Thomson, will generally appreciate the series of exercises contained in the book now published by the same authors. Produced in pamphlet form, on sheets measuring nearly 19 in. by 14½ in., this essay is less suitable for the bookcase than for the drawing-table, where the ample dimensions of its accompanying diagrams will be found of great assistance to those who desire to follow the methods set forth. The essay on graphical statics, occupying the first two and the last three leaves, takes the form of a running commentary on the exercises, and is based upon various chapters in "Elementary Applied Mechanics," and the illustrations are printed from the blocks used for that work. Several of the graphic exercises include diagrams and explanatory matter, also taken from the treatise mentioned, but most of the examples are elucidated by diagrams drawn to a fairly large scale, and full directions are printed on the plates side by side with the diagrams. The graduated course demonstrates the application of graphic statics to various types of work—such as roofs, girders, retaining walls, masonry arches, and steel arches—which are of direct interest to architects and structural engineers, and the inclusion of illustrations and explanatory matter already printed in "Elementary Applied Mechanics," has the advantage of rendering this pamphlet a self-contained work, which may be studied independently of, or in conjunction with, the main treatise, as may be most convenient.

Structural Designers' Handbook: Giving Diagrams and Tables for the Design of Beams, Girders, and Columns, with Calculations Based on the New York City Building Code. By WILLIAM FRY SCOTT. New York: The Engineering News Publishing Co. 1904.

THE general idea of this book is excellent, but being largely based upon American building regulations and sections of structural steel produced in the United States, its contents are only of limited value to British architects. The work is not a treatise, as the term is generally understood, and consists very largely of numerous diagrams by the aid of which beams and columns may be selected for various spans and conditions of loading without the necessity for tedious calculations. The employment of diagrammatic information in this way is all very well if the user is quite satisfied upon three essentials:—(1) That the bases of computation are in accordance with recognised practice; (2) that the diagrams have been correctly computed and accurately drawn; and (3) that the sections for which results are given correspond in all essentials with those to be adopted. For reasons stated above, it will be seen that the diagrams published by Mr. Scott are not entirely suitable for employment in this country. In other respects, however, we believe them to be quite as trustworthy as they are ingenious. Considering the heavy responsibility resting upon the architect or engineer who undertakes the design and erection of a building or other structure, we hold that every detail should be finally settled either by direct calculation, or by reference to tabular or diagrammatic results prepared and verified under the direction of the designer, unless tables or diagrams of authoritative character be available. Nevertheless, a book of the kind now under notice is an invaluable aid in approximate determinations, in preliminary estimates, and in preparing alternative schemes for the purpose of comparison. If used in this way, Mr. Scott's work may be adopted with advantage by British architects and engineers, for its convenience as a "ready-reckoner" is beyond dispute.

BOOKS RECEIVED.

THE ANNUAL OF THE BRITISH SCHOOL AT ATHENS: Session 1903-4. (Macmillan & Co. 17s.)

ENGLISH GOLDSMITHS AND THEIR MARKS. By C. J. Jackson, F.S.A. (Macmillan & Co. 2*l.* 2s.)

THE GARDENS OF ITALY. By Charles Latham, with descriptions by E. March Phillipps. (Offices of *Country Life*. 3*l.* 3s.)

TRADE CATALOGUES.

MESSRS. MARK FAWCETT & Co. send us a circular illustrating the most recent improvements in their well-known floor system. The "lintel" is made of porous terra-cotta in place of closely-compacted tile, the form of cross-section being approximately that of a triangle with curved sides and a straight base. A central stiffening web divides the interior cavity into two spaces; the exterior sides are ribbed, and the base is moulded with dove-tailed grooves to afford a key for plaster. Owing to the additional strength provided by the central web, the lintels can now be made 2 ft. 6 in. long, and by reason of its porosity the terra-cotta increases fire-resistance and minimises the transmission of sound. Rolled steel joists of special section are now employed, the dimensions of the compression flange being much smaller than the tension flange. The reason for this is that the concrete deposited around the joists and partly around the lintels is capable of taking a very considerable proportion of the compressive stress, and renders unnecessary the wide flange formerly used, thereby reducing weight and cost. It should also be noted that the concrete is entirely self-supporting although moulded upon and between the terra-cotta lintels and thoroughly connected with them by means of the ribs along each side of the lintels. The effect of the modifications here described is to bring the design of the "Fawcett" floor more closely into accord with the principles of concrete-steel construction without departing from the original idea of the system.

Messrs. Hartley & Sugden, of Halifax, send us their catalogue of heating appliances, including radiators, hot-water and steam boilers and water heaters. The radiators, here illustrated, are of good design, and we are pleased to observe that no attempt has been made to spoil their appearance by the introduction of florid decoration. The lines of the radiators are simple, and the only ornamentation is to be found in the form of fluting, which is not likely to be out of keeping with any building. One double-column radiator is supplied with strips of metal fitted between the sections so that air admitted from the back may be delivered only from the upper part of the heating surface. In cases where air is admitted through the floor strips are also fitted at the back of the radiator. Among other boilers illustrated are three patterns of cast-iron sectional boilers for low-pressure hot-water heating. Although cast-iron is somewhat liable to crack under certain

conditions, this material is now very largely used for hot-water boilers and apparently with satisfactory results. One great convenience offered by the sectional construction illustrated in this catalogue is that any individual section can be readily replaced, and another is that the size of any boiler can be increased at pleasure by attaching additional sections. Wrought-iron boilers of various types—both independent and for brick-setting—are fully described and illustrated, as also are low-pressure and high-pressure steam boilers for heating and power plants. Two patterns of steam water heaters are shown, one of these being a new design vertical type heater occupying very little floor space in proportion to heating capacity.

Mr. Joseph Jackson sends us his catalogue of constructional steelwork and concrete-steel floors. The first sixteen pages contain tables of beams, stanchions, and columns of various kinds, including an ingenious type of composite stanchion designed so as to utilise the high tensile resistance of mild steel and the great compressive resistance of cast-iron. Some results obtained by Messrs. D. Kirkaldy from tests of these stanchions appear to confirm the claim of the maker that they will carry a greater load and give a higher factor of safety than mild steel stanchions of equal sectional area. In the next two or three pages we find illustrations of genuine steel cage construction, one of these showing the part section of a Thames-side warehouse from foundations to roof. Concrete-steel floors are represented by five different systems, but this form of construction is only applied to the panels between parallel rolled steel joists, which are no longer necessary. Indeed, from the point of view of fire-protection the lower flanges of heavy girders involve greater risk than the small bars constituting the reinforcement of concrete-steel beams. Among other representative examples of work illustrated in this interesting little catalogue we may mention steel roof trusses, fireproof roofs of steel encased with concrete, steel framed buildings for factories and storehouses, bridge work, basement lighting, steel staircases, window sashes, and tanks.

Messrs. Summerscales & Sons (Keighley) send us a large and fully illustrated catalogue of their laundry machinery and cooking apparatus. Among the objects illustrated and described are various rotary washing machines, mostly made entirely of metal, though there are some smaller ones with wooden drums; various forms of wringing machines and Hydro extractors; gas irons and fittings; coppers, linen presses, clothes waggons, and drying closets of various design. We take from the catalogue the following description of the principle and action of their "Overhead Drying Horses":—

"The general principle is based upon the natural capacity of air to hold water in suspension, therefore, for efficiently drying linen, it is obvious that the air should not be allowed to approach the point of saturation, but pass freely and rapidly through the drying chamber. To attain this object we employ a specially constructed exhaust fan, which draws pure air through a heater (for economy of space fixed on the roof of the drying chamber), composed of encased steel tubes heated by live steam, or the exhaust steam from engine, and forcing the heated air into the drying chamber, where it is equally distributed by a trunk pipe through graduated slots, arranged so that the temperature and point of admission are completely under control, and all parts of the chamber filled with heated air under a slight pressure. As the fresh heated air is being constantly forced through the articles to be dried, taking up a small amount of moisture in saturation, and then forced again into the open air, carrying any vitiated matter with it, it is replaced by a fresh and constant volume of pure heated air."

The catalogue contains, in the general remarks, some useful practical information; and there is a whole series of code words for simplifying arrangements by telegram.

Messrs. Twyfords (Hanley) have sent us a circular, in which they draw attention to the special ware in which their principal water-closet basins are now made. Ordinary earthenware and fireclay, in their unglazed state, are more or less porous, and Messrs. Twyfords claim that they have succeeded in producing two new wares which, even when unglazed, are "absolutely non-porous." "Vitrina" is the name given to the substitute for earthenware, and "Vitrina Ironstone" that of the substitute for fireclay. The tests by Messrs. David Kirkaldy & Sons show that the unglazed "Vitrina" has an absorption of only $\frac{1}{4}$ per cent. after seven days' immersion, and the unglazed "Vitrina Ironstone" of $\frac{4}{5}$ per cent. We need scarcely say that for water-closets the two wares are always glazed, so that even better results are obtained.

From the British Luxfer Prism Syndicate we have received a catalogue of 138 pages, containing descriptions and illustrations of their various kinds of glazing. The catalogue is divided into five sections, the first of which deals with the simpler applications of "Luxfer" prismatic glass. This glass is flat outside, but corrugated inside, so that the section resembles a saw; the corrugations are of various pitches to suit different conditions of lighting and the degrees of refraction required. In its original form, the glazing was formed with 4-in. squares of white crystal glass united in various way in a brass frame, but rolled prismatic sheets of large size are now made, as well as "Luxfer Prism Plate-Glass," the latter being manufactured in sizes up to 50 in. by 55 in., and supplied either polished or unpolished. The second section deals with pavement and other lights, the third with electro-glazed fire-resisting "Luxfer" window-glass, and the fourth with ornamental forms of "Luxfer" glazing (plain and coloured) with cames of lead as in ordinary leaded lights, or of coppered lead, or of copper (electro-glazed). The designs in this section are worthy of particular mention, and include examples of glazing suitable for buildings in the various English styles, from the XIIIth to the XVIIIth century, and many others of a modern type. In the fifth section various forms of the "Luxfer" patent roof-glazing without putty are shown in a number of folding plates. Different sections of steel bars are adopted, and the bars are galvanised or lead-encased, while the glass is secured by lead, zinc, or copper capping; asbestos packing is used with some of the sections, and the glass is either plain or prismatic. This is a good catalogue, and will be of great assistance to architects.

We have received from Messrs. Young & Marten a copy of their new quarto catalogue of 460 pages, entitled "Tariff of Requisites for Building Construction." It contains illustrations and prices of nearly everything required in ordinary buildings, including drain-pipes, traps, and manhole-covers, bricks and tiles, English and Swedish doors, wood and iron sashes and casements, leaded lights and other glazing, sinks, baths, lavatories and water-closets, gas and water pipes, kitcheners and fire-grates, mantelpieces, plumbers' metal-work, crank and electric bell fittings, gas and electric light fittings, builders' plant, workmen's tools, hinges, latches, and other hardware; heating apparatus, ventilators, paints and varnishes, and many other requisites, large and small. It is certainly a most comprehensive catalogue, and, although architects will look elsewhere for fittings of a special character, they cannot fail to find this volume useful, and to the builder it will be a still greater boon.

Messrs. Heathman & Co. send us a catalogue of their useful patent extension ladders, and another of their hand fire-extinguishing pumps and grenades and of their various forms of fire-escapes for keeping in private houses, etc. Their fire hose for attachment to house taps is a very useful and not expensive article, which would be much more efficient in extinguishing an incipient fire than buckets or jugs, and the water could be better and more directly applied.

PARISH CHURCH, MARTON.—Messrs. Harold Bailey & Wood, of Newark and London, are appointed architects for the reparation, at a computed cost of about 800*l.*, of the parish church of Marton, in the parts of Lindsey, Lincolnshire. The church, dedicated to St. Margaret, and built of stone, consists of a chancel, nave and aisles, and has an embattled western tower. The tower, we may observe, is scheduled in Professor Baldwin Brown's "List of churches in England that exhibit traces of Saxon building," which was printed in our columns of May 2, 1903, and Professor Brown is of opinion that the tower belongs most probably to the middle of the XIth century, though, as he points out, there are in the East Anglian region several survivals of Saxon forms in post-Conquest buildings. The interior of the church presents features of the Norman and later periods, with vestiges of pre-Conquest carving and other work. At a restoration carried out in 1868 the north chancel arch, which had been bricked up, was opened out and the west gallery was taken down. Marton is traversed by a Roman road known as Tilbridge-lane, and the river Trent separates the parish from Nottinghamshire.

The Student's Column.

STEAM BOILERS AND PIPES.—I.

INTRODUCTION—STEAM BOILERS—BOILER TYPES.

OUR primary object in the ensuing articles is to set down some of the most essential points for attention by architects who are called upon to install plant for the generation and distribution of steam in hospitals, asylums, workhouses, infirmaries, schools, hotels, industrial works, and other buildings.

The first part of the title chosen might easily be made to cover an immense field. A full discussion of steam boilers would make it necessary to consider the laws of heat, radiation, and conduction, the calorific value of fuels, the laws of combustion and evaporation, the physical properties of materials employed in the construction of boilers, the design and manufacture of boilers, furnaces, and smoke-prevention apparatus, and other subjects directly connected with steam-boiler practice.

Therefore, we think it desirable to explain at the outset that, in the treatment of steam boilers and auxiliary plant, no attempt will be made to deal with matters belonging more particularly to the province of the mechanical engineer. Those of our readers who desire to study such details will be able to find all information required in the various text-books published on steam-boiler construction. We merely propose to present some notes on aspects of the subject which must come before every architect who is required to make provision in his specifications for steam-producing plant, who has to design buildings suitable for its accommodation, and who is responsible to his client for the efficiency and safety of the installation.

Similarly, with regard to the kindred subject of steam pipes, the interests of the pipe-maker and pipe-fitter will give place to those of the architect, who is concerned more with the principles of design than with the details of execution. But essential details will not be neglected, for, upon the proper recognition and observance of these by the designer, the satisfactory character of a complete pipe system very largely depends.

As no system of boilers and pipes is complete unless it includes auxiliary apparatus of various kinds, as well as valves and fittings, sufficient mention will be made of all appliances that form integral parts of an installation.

STEAM BOILERS.

Boiler Types.—Before discussing the question of boiler selection, it may be useful to present a brief summary of the principal boiler types available, together with some notes upon the distinguishing characteristics of each.

(1) With the exception of the plain cylindrical boiler, now virtually obsolete for steam-raising purposes, no boiler is more simple than the Cornish type (Fig. 1). This is durable, costs little for maintenance, and burns fuel of inferior quality with comparative economy. One advantage it possesses is that sludge deposited from unpurified feed water settles chiefly at the bottom, where it is away from the region of maximum heat and can be removed in great part by blowing off. Finally, the interior of a Cornish boiler is very accessible for cleaning.

It is usually made in sizes from 7 ft. long by 3 ft. 3 in. diameter to 30 ft. long by 7 ft. diameter, with effective heating surfaces ranging from about 70 sq. ft. to 700 sq. ft., and for working pressures of 40 lb. to 100 lb. per sq. in. For diameters above 6 ft. the Lancashire type is preferable.

(2) The Lancashire boiler (Fig. 2) is another simple, durable, and economical type, requiring few repairs, and providing a large evaporating surface.

In consequence of the confined space between the flues, the Lancashire boiler is not so easy to clean as the Cornish type, especially in the smaller sizes.

For instance, in a boiler of 6 ft. diameter, with two 2-ft. 3-in. diameter flues, only 1 ft. 6 in. is left for the three spaces, one between and one on each side of the tubes. Hence, the only means of access to the bottom of the boiler is at the back, where the tubes are reduced in diameter to permit the

attachment of the end plate by an internal angle ring.

The Lancashire boiler is commonly made in sizes from 16 ft. long by 6 ft. diameter to 30 ft. long by 8 ft. diameter, with effective heating surfaces ranging from about 350 sq. ft. to 1,030 sq. ft., and for working pressures of 50 lb. to 150 lb. per sq. in.

Some firms make Lancashire boilers with a diameter as small as 5 ft. 6 in., but, for the reasons stated above, this type should never be of less than 6 ft. diameter.

(3) The three-flued boiler is a modification of the Lancashire type, and, as shown in Fig. 3, has two furnace tubes of equal diameter and one tube about 25 per cent. less in diameter, placed near the bottom. Owing to the transverse area occupied by the three flues, this type is not made in diameters of less than 8 ft.

The advantages claimed for it are:—That a large volume of more or less dead water is displaced by the additional flue; that more vigorous circulation is insured; and that, by reason of the more uniform temperature resulting, the strains due to unequal expansion and contraction are considerably reduced.

(4) The Galloway boiler is another modification of the Lancashire type. It has two furnace tubes extending as far as the bridges at the back of the fire grates, but beyond these the tubes are united to form a special form of flue pierced by circulation tubes and having recesses or pockets in the side walls. The circulation tubes and pockets have the effect of breaking up the furnace gases and of absorbing considerable quantities of heat which are communicated to the water. The mixture of the gases behind the fire bridges assists the process of combustion, and tends to economise fuel and to reduce smoke production.

This type of boiler presents further complications in respect of cleaning, but, so far as steam raising is concerned, it is very efficient owing to the rapid circulation and the complete combustion obtained. It is made in sizes very similar to those of ordinary Lancashire boilers, but has a larger output than these in proportion to actual dimensions.

(5) The externally-fired multitubular boiler, in its most simple form, is fired externally. Like the Cornish type, it may be regarded as a development of the plain cylindrical boiler, only that the additional means of imparting heat to the water take the form of small internal smoke tubes running from front to back, instead of being constituted by a large internal furnace tube.

The general construction of this boiler is sufficiently illustrated by Fig. 4. It is by no means a self-contained apparatus, as the fire grate has to be set in the enclosing brickwork.

The multitubular boiler is an efficient steam producer, but has the disadvantage that sludge deposited from impure feed water accumulates at the bottom where the heat is at a maximum. Consequently, overheating and burning of the plates is almost inevitable unless purified feed water be employed.

Internally-fired multitubular boilers of various patterns have been introduced for the purpose of avoiding the defects of the externally-fired variety. Most of these modifications combine the essential features of the Cornish or Lancashire type.

(6) Fig. 5 represents a multitubular boiler having a circular flue making it a combination of the Cornish and multitubular types. This form of boiler presents the advantage that it can be erected very cheaply for a temporary installation without side or bottom brick flues, or, if desired, by simply placing the boiler on cast-iron cradles and providing a wrought-iron chimney. For permanent work, however, it should be seated similarly to a Cornish boiler.

The boiler is made in sizes ranging from 10 ft. long by 4 ft. diameter to 18 ft. long by 6 ft. diameter, with effective heating surfaces from about 170 sq. ft. up to 500 sq. ft., and for the usual pressures. It is also made as a combined Lancashire and multitubular boiler in sizes from 18 ft. long by 6 ft. 6 in. diameter to 20 ft. long by 7 ft. diameter, the effective heating surfaces for these being from about 600 sq. ft. to 850 sq. ft.

A combined Lancashire and multitubular boiler is also made, in which the furnace tubes extend for a greater length and terminate in a cylindrical combustion chamber, into the back plate of which the smoke tubes are expanded.

Another variety consists of two separate boilers, one being a short Lancashire boiler and the other a short multitubular boiler. The two portions are fixed tandem fashion 4 ft. apart longitudinally. The intervening space is enclosed by brickwork, and constitutes a combustion chamber. Connexion is established between the water and steam spaces by a water pipe of large diameter at the bottom and a steam drum on the top. One convenient feature of this design is that transport is facilitated by the separation of the boiler into two parts.

(7) Fig. 6 is a longitudinal section and an end elevation of a multitubular boiler, with two internal flues, and may be described as a Lancashire tubular boiler. This design was introduced nearly forty years ago by Mr. J. N. Paxman, M.Inst.C.E., for the special purpose of obtaining a large output of steam from a boiler occupying a minimum amount of floor space.

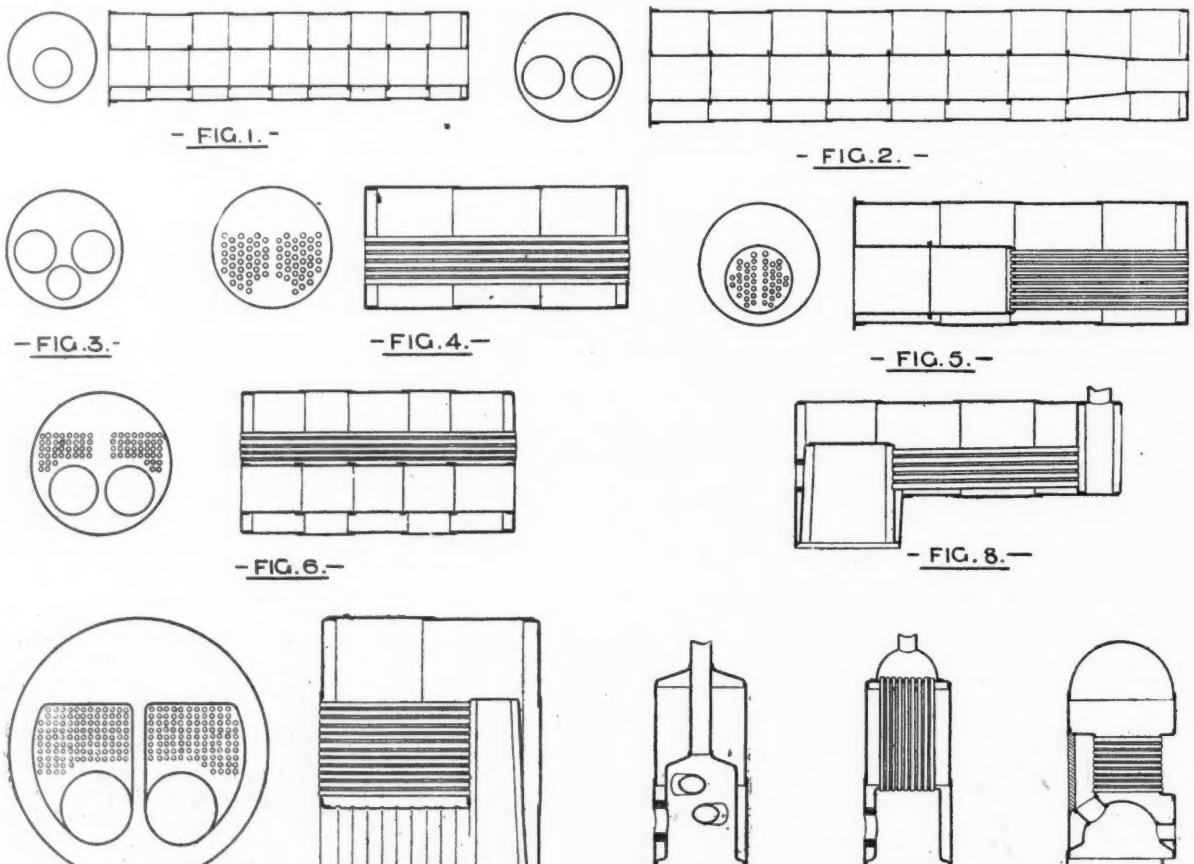
The boiler is also made with one flue, thereby constituting a combination of the multitubular boiler with the Cornish type, or a Cornish tubular boiler.

When the furnace gases emerge at the back from the flue or flues they enter a combustion chamber of brick, or iron lined with firebrick, and return through the small tubes to a smoke-box in front, whence they proceed through brick flues along the sides of the boiler to the chimney, or may be taken direct to the chimney.

This is a very efficient and economical form of steam generator, and is particularly useful in places where space is limited. It is made in stock sizes ranging from 6 ft. 5 in. long by 4 ft. 9 in. diameter to 12 ft. 6 in. long by 6 ft. 6 in. diameter, with one flue, and from 12 ft. 6 in. long by 7 ft. diameter to 14 ft. long by 8 ft. diameter, with two flues, the working pressures being the same as those usually adopted for Cornish and Lancashire boilers.

(8) Another form of multitubular boiler with internal furnaces is the Marine return-tube type, which is used in some towns and cities where space has to be economised. The floor space required is very much less than that necessary for a Lancashire boiler, and, if not overworked, it is a very economical steam raiser.

The Marine return-tube boiler is made for land service in sizes ranging from 4 ft. 6 in. by 4 ft. diameter to 9 ft. long by 11 ft. diameter, the latter dimensions representing the largest boiler that can be forwarded by railway. The smaller sizes have one flue, like a Cornish boiler, and the larger sizes two flues, like a Lancashire boiler. The effective heating surfaces range from about 100 sq. ft. up to 1,000 sq. ft., and the pressures from



Illustrations to Student's Column.

100 lb. per sq. in. upwards. The Dry-back return-tube boiler is similar in shape to the Marine boiler, the chief difference being the absence of an internal combustion chamber.

(9) The Locomotive boiler (Fig. 8) is of the multitubular type, with an extension containing the fire-box. When of well-proportioned design it is an economical and efficient steam generator, and is particularly adapted for temporary works, because the cost of installation is exceedingly small.

Boilers of this type are generally made in sizes from 10 ft. long by 2 ft. 9 in. wide to 17 ft. 6 in. long by 5 ft. 6 in. wide over all dimensions, with effective heating surfaces of from 200 sq. ft. to 1,000 sq. ft., and suitable for pressures of 100 lb. per sq. in. and upwards.

(10) Watertube boilers are made in so many different forms that it would be impossible to mention all of them in the present summary, and invidious to mention one or two while ignoring the remainder.

The distinguishing characteristic of the watertube boiler is that the water and steam are contained in tubes the outer surfaces of which are exposed to the fire. The tubes are connected with steam and water drums arranged in different ways, but in every case the fire is outside the tubes and drums. The tubes are always in tension, instead of in compression, as happens in all other boilers, and the steam drums are very much smaller than the shells of cylindrical boilers.

(11) The vertical boiler is made in two main styles, the first with from one to four or more cross-tubes of comparatively large diameter, as shown in Fig. 9, and the second with from about five to thirty vertical tubes of small diameter, as in Fig. 10.

Ordinary boilers of this type are very wasteful of fuel, especially the cross-tube variety. Their chief recommendations are:—Maximum steam production on minimum floor space, extreme adaptability for temporary or emergency work, low cost of installation, and suitability for small supplies of steam.

Fig. 11 is a section showing the arrangement of a vertical boiler in which small tubes are fixed horizontally, and the efficiency is increased by a lengthened path for the furnace gases.

Special patterns of vertical boilers produced by several well-known makers are much more economical than the ordinary varieties, and are distinctly worth consideration by prospective users.

METROPOLITAN ASYLUMS BOARD.

THE usual fortnightly meeting of the Managers of the Metropolitan Asylums District was held on Saturday last week at the offices of the Board, Victoria Embankment.

Leavesden Asylum.—Among the correspondence received from the Local Government Board was a letter sanctioning the plans of the proposed conversion of two blocks at this asylum into infirmaries. The cost is estimated at 1,150*l.* On the recommendation of the Finance Committee it was agreed to apply to the Local Government Board for sanction to the expenditure of 3,000*l.* on irrigation works on land recently acquired at the asylum.

Belmont Asylum.—The Local Government Board wrote sanctioning the proposal of the Managers to invite tenders from six selected firms for the provision of (a) laundry machinery and fittings; and (b) heating arrangements and additions to the boiler-house at this asylum, without in the first instance advertising for tenders.

Loans.—On the recommendation of the Finance Committee it was agreed:

That application be made to the London County Council for the loan of the undermentioned sums, amounting to 100,978*l.*, to be repaid within the periods named at a rate of interest not exceeding 3*l.* 6s. 8d. per cent. per annum, upon the balance for the time being outstanding—

	Years.	£.
Southern Hospital — Erection of ..	30	40,000
Leavesden Asylum—Cottages for married attendants	30	1,100
Training Ship *Exmouth*—Providing and fitting up new ship	30	1,350
South-Eastern Hospital—Reconstruction of	20	50,000
Eastern Hospital—Laundry alterations	15	360
High Wood School—Erecting and fitting up	15	1,200
Belmont Asylum — Alterations and additions	10	1,730
Belmont Asylum — Installation of electric light, etc.	10	4,000
Long Reach Hospital—New pontoon and landing-stage	10	488
Fountain Hospital — Fire-resisting works	5	750
		£100,978

Darenth Asylum.—Messrs. Taperell & Haase were appointed to take out the quantities for the annual cleaning and painting works at this asylum. The cost is estimated by the Engineer-in-Chief to be 2,500*l.*

North-Eastern Hospital.—The Board approved of the plans submitted by the Engineer-in-Chief for the erection of new boiler-house, coal stores, and workshops at this hospital. The cost is estimated at 16,000*l.*

COURT OF COMMON COUNCIL.

THE usual fortnightly meeting of the Court of Common Council was held on Thursday last week at the Guildhall, the Lord Mayor presiding.

The Trams over Blackfriars Bridge.—Considerable discussion took place on a report by the Special Committee appointed to consider this matter. The Committee recommended the Court to assent to the bringing of the tramways over a widened bridge at Blackfriars, subject to a satisfactory arrangement being arrived at with the London County Council as to cost, management, control, and maintenance. Mr. H. D. Kimber moved an amendment to this to the effect that before committing itself to any particular scheme the Corporation should be afforded an opportunity of considering its feasibility and all details involved. This was rejected on a division by 101 votes to 30, and the Committee's recommendation, with the following alterations, was carried—". . . assent to the bringing of the tramways over a widened bridge at Blackfriars, or new bridge adjoining, subject to a satisfactory arrangement being previously arrived at," etc.

Iron and Glass Shelter at the Royal Hotel.—On the recommendation of the Streets Committee it was agreed to permit the proprietors of De Keyser's Royal Hotel, Ltd., to erect an iron and glass shelter over the footway at the entrance to the hotel on the Victoria Embankment.

Having transacted other business, the Court adjourned.

OBITUARY.

MR. C. A. WALKER.—Mr. Charles Aloysius Walker, a Preston contractor, died on the 27th ult. He was fifty years of age, and leaves a widow and eight children. He was President of the Master Builders' Association.

GENERAL BUILDING NEWS.

ST. MARY'S CHURCH, ABERDEEN.—A commencement has now been made to the building operations in connexion with the new vestry and church room for St. Mary's, Carden-place, the foundation-stone of which was laid on Saturday. The site of the new buildings is on the south side of the church on ground fronting Albert-terrace. The church room, which is planned to seat about 120, will measure 26 ft. by 20 ft. It will be lighted by nine Gothic lancet-shaped windows. Externally, the new building, which is being erected from plans by Mr. Arthur Clyne, architect, Aberdeen, has been designed in harmony with the architectural style of the church.

R.C. CHURCH, BLANTYRE.—On the 18th ult. the new church at Blantyre for St. Joseph's R.C. congregation was opened. The new church is situated at the junction of Glasgow-road and Stonefield-road, and is 142 ft. in length, exclusive of the baptistry, which projects another 15 ft. to the front. The width of the building is 62 ft., and the height 60 ft. from the ground to the point of the cross. It consists of chancel, nave, side chapels, aisles, baptistry, sacristies, confessional, and choir gallery, etc. The nave is 96 ft. long and 30 ft. wide, and is divided into six bays. The chancel is apsidal in form, and is divided from the nave by an extra main cupola filled in with tracery. The chancel wall over the altar is pierced with a large rose window, 12 ft. in diameter. In the façade, which is the principal feature of the structure, are placed three doorways, which are deeply arched and recessed to receive the doors. The façade gable is strongly buttressed both at the sides and in the centre. In the centre buttress is placed a niche of St. Joseph, the patron of the church. The church is built with red stone. The whole has been executed by Messrs. Pugin & Pugin, and the total cost of the church is about 9,000*l.*

WESLEYAN CHURCH, HUDDERSFIELD. — The memorial-stones of a new Wesleyan Church for the Crosland Moor district of Huddersfield were laid recently. Messrs. W. J. Morley & Son, of Bradford and London, are the architects. The building is in the decorated Gothic style, and will consist of nave, transepts, organ and choir recesses, galleries, and four vestries. The seating accommodation is for a congregation of 605.

WESLEYAN CHURCH, STOCKTON HEATH.—The foundation-stones were laid on the 22nd ult. of the new Wesleyan Church for Stockton Heath, a Warrington suburb. Mr. Percy Silcock is the architect. The cost is estimated at about 1,500*l.* When completed the church will accommodate some 270 persons and the school 200.

CHANCEL, PITTINGTON PARISH CHURCH.—The Assistant Bishop of Durham recently dedicated the chancel of Pittington Church, which has been raised and restored to its former length by an addition of 13 ft. The new chancel is in Early English style and of the same proportions as the old Early English chancel which was destroyed in 1847. It has three long lancet windows at the east end, four similar windows on the south side, and two on the north. At the same time a new organ in memory of the late Queen Victoria and other memorial offerings were dedicated. It was erected by Messrs. Harrison, of Durham. The work was carried out from the plans of the late W. S. Hicks.

BAPTIST CHURCH AND SCHOOL, DOUGLAS, ISLE OF MAN.—The new church at Douglas, Isle of Man, was opened on June 11. It has been built to take the place of the former temporary wood structure. The main body of the church approaches a square in plan, with a chancel extending at the north end, having the choir seats at each side, with pulpit at the front west corner of chancel. The baptistry, with a special view to its convenience on baptismal occasions, is placed longitudinally in the centre of the chancel, with steps at each end, so that participants pass into the water at the entrance of the chancel in view of the whole congregation, and, passing out at the far end, almost immediately enter the vestries to right and left respectively. The organ chamber is on one side of the chancel, with choir vestry below and minister's vestry on opposite side. The school-room occupies about half the area under the church, and on this level are also heating-chamber, kitchen, and ladies' and gentlemen's conveniences. A staircase communicates between church vestibule and school vestibule. The accommodation of the church is for about 400 sittings and the school about 230 scholars. The internal fittings are of pitch-pine, the roof timbers being left unvarnished. The front facing Broadway is treated in the Early English style, with dressings to doors and windows of Bath stone. The tower is at present only carried to the square of building, but an octagonal spire is intended to complete the front. The cost, exclusive of land, is about 2,600*l.* The work has been carried out from the designs and under the superintendence of Mr. Francis P. Halsall, Chapel-street, Southport, Mr. M. Carnie, of Douglas, being the builder. The seating contract was carried out by Mr. G. Preston, also of Douglas; heating and ventilating by Mr. Lewis Hill, Edge Hill, Liverpool.

BAPTIST CHURCH, CONSETT.—The trustees of the Baptist Society have accepted the designs of Mr. Baynes, architect, of London, for the erection of a new church and Sunday school in Front-street, Consett. The total cost will be 3,350*l.*

CHURCH RESTORATION, SEBERGHAM, CUMBERLAND.—The ancient parish church at Sebergham was reopened on the 7th ult., after having undergone thorough restoration and improvement at a cost of over 800*l.* Mr. Martindale, Carlisle, was the architect, and Mr. Grisenthwaite, Penrith, the contractor.

CHURCH TOWER, ST. ANNES-ON-THE-SEA, LANCASHIRE.—A tower is shortly to be added to St. Thomas's Church at St. Annes. The work will be carried out from designs prepared by Messrs. Austin & Paley, the architects for the main buildings.

CATHOLIC CHAPEL, WOLVERHAMPTON.—The foundation-stones of a new Catholic chapel and vestries in connexion with Christ Church, Wolverhampton, were laid a short time ago. The new buildings consist of a chapel 20 ft. long and 14 ft. wide, at the east end of the north aisle, with apsidal end. The walls will be panelled oak inside for a height of 12 ft., and the top part faced with stone, and the open timbered roof covered with slates. At the rear and side of the chancel will be three vestries, having a separate side entrance. The walls and ceiling will be lined with pine matched boarding, and the flat roof covered with lead; a flat roof being adopted so as not to hide the present building. Externally the stone walls are finished similar to the present church. The builders are Messrs. Willcock & Co., of Wolverhampton, and the architects Messrs. Fleeming & Son, of the same town. The cost will be about 1,500*l.*

WESLEYAN CHAPEL AND SCHOOLS, ST. IVES.—A new Wesleyan chapel and schools were recently opened at St. Ives. The new buildings are in the Gothic style. The main entrance doors open on a narthex, the walls of which are faced with red Bawsey brick. The chapel itself is 55 ft. long and 40 ft. wide, with a shallow western transept and a larger eastern one, which gives access to the minister's vestry and the school premises. The aisles, which are floored with wood blocks, are 4 ft. wide, and a gallery roofs in the narthex. There are three five-light mullion-traceried windows on either side of the church, with a six-light window in the western transept and a two-light window in the south wall of the eastern transept. The woodwork throughout is of pitch-pine. The front elevation of the building has a main central entrance, with buttresses on either side, finished with octagon ornaments.

Plinths, mouldings, bands, dressings, and copings are in Monk's Park stone, the base and angles in Snettisham Carr stone, and the fillings finished in Random rubble. The side elevation is faced with red Bawsey bricks. The school premises consist of vestibule, spacious corridor, vestry, classroom, church parlour, infants'-room, a main hall (36 ft. by 24 ft.), with three classrooms in curtained alcoves, and also a kitchen, lavatory, and heating-chamber, and the premises are approached along the eastern side of the church. The building is warmed throughout by low-pressure hot-water pipes on the radiator principle. The architect is Mr. F. Sidney Webber, of London, and the builder Mr. F. Giddings, of St. Ives.

THEOLOGICAL COLLEGE, LLANDAFF.—On the 20th ult. the foundation-stone of the new home of St. Michael and All Angels Theological College was laid at Llandaff. The plans for the work have been prepared by Mr. F. R. Kempson, architect, and the builder is Mr. James Allan. The estimated cost is 20,000*l.*

SCHOOL-CHAPEL, CATHAYS, CARDIFF.—Under the auspices of Tredearville Baptist Mission, the foundation-stones of a new school-chapel were laid recently. The plans of Mr. W. Beddoe Rees, architect, were accepted for the erection of a new school-chapel at Cathays capable of seating about 450, the builders being E. R. Evans Brothers, Cathays. The cost is estimated at about 1,300*l.*

PRIMITIVE METHODIST CHAPEL, CHESTER-LE-STREET.—On the 21st ult. the foundation-stones of a new Primitive Methodist chapel were laid at Chester-le-Street. The site of the new building is in Clifford-terrace, and the church, when completed, will provide seating accommodation for between 400 and 500. It will comprise a nave, three vestries, gallery, and organ gallery. The main entrance will be situated in Clifford-terrace, while the entrance to the gallery will be in the tower. The building will be in the Gothic style, and will be executed in red brick with stone facings. Subsequently it is intended to extend the building by the erection of a Sunday-school, which will contain six classrooms. It is expected that the chapel will be completed within nine months, and will cost about 2,200*l.* The building is being erected by Mr. C. Groves, of Chester-le-Street, from plans prepared by Messrs. Boyd & Groves, architects, Newcastle.

NEW SCHOOL, CROSSNACREEVY.—The memorial stones have just been laid of the "O'Neill Memorial School" at Crossnacreevy, County Down. The new building will comprise a schoolroom and two classrooms, also vestibule and cloakroom, together with lavatories and latrines and yards for the recreation of boys and girls enclosed all round by a wall. The partition between one of the classrooms will be moveable, so that it can be thrown into the schoolroom and form a large hall for public meetings, concerts, etc. The buildings will be constructed of compressed bricks from the Laganvale works, with moulded brick strings and labels, also moulded stone cills, and half-timbered gables. Mr. James Kidd, builder, Belfast, is the contractor for the works, and Mr. Kirker, C.E., Assistant Surveyor, Board of Works, the architect.

LEEDS GRAMMAR SCHOOL EXTENSION.—Extensions have been made to the Leeds Grammar School at a cost of 20,000*l.* The Governors asked for designs for the reconstruction of the old buildings at the corner of Woodhouse Moor, and those submitted by Messrs. Austin & Paley, architects, of Lancaster, were accepted. The complete scheme included the erection of two long rows of classrooms, and a large central hall, the area of the extension being considerably larger than that of the old premises. A large part of the project is now nearly completed, and though the central hall, which is to be 100 ft. by 40 ft., has not been erected, the longer row of classrooms, comprising a dozen apartments looking to the south, have been finished, and are already being made use of. In addition, a new lecture hall has been provided, together with a set of chemical and physical laboratories. The extension is two stories high, and is built of stone.

BRANCH LIBRARY, KIRKDALE, LIVERPOOL.—The new Kirkdale Branch Library is now nearing completion, and will shortly be opened. The exterior is of Runcorn red stone, with selected grey brick dressings, the whole being treated in the classic style. On the right on entering is the general reading-room, 73 ft. by 30 ft., and on the left is a room of almost similar dimensions, one-half of which is apportioned for a ladies' reading-room, and the other half for boys and girls. The lending library is in the centre of the building, with a mezzonine floor at the end for the storage of books. The public rooms and vestibule are surrounded by a dado of rich glazed tiles, and the fittings and tables are of American oak. The building has been erected by Messrs. W. Hall & Son, Limited, from designs prepared under the direction of the Corporation Surveyor, Mr. T. Shelmerdine.

PUBLIC LIBRARY, TINSLEY.—The newly-built library at Tinsley was opened a short time ago. The building is in the Renaissance style, and is faced with local pressed bricks and Grenoside stone dressing. The architects are Messrs. Holmes & Watson, and the contract was let to Messrs. T. Grey & Sons.

HALL, ALLENDALE.—On Whit Monday afternoon the foundation-stones of a hall for Allendale Town were laid. Messrs. Badenoch & Bruce, of Newcastle, are the architects, Mr. F. W. Charlton, Allendale, secured the contract for the mason work, and Messrs. Lowe & Hetherington, also of Allendale, for all the other trades. The hall will be 50 ft. long by 29 ft. wide, and will accommodate about 300 of a mixed audience. There are a committee-room capable of seating from forty to fifty, a kitchen for tea meetings, with lavatory and other conveniences; heating chamber and meter-house for the generator, as the hall is to be lighted by acetylene gas, and the heating will be by low pressure hot water. The buildings are of local stone with Prudham dressings. The hall is designed with open timber roof, having curved principals.

ROMAN CATHOLIC PRESBYTERY, NEWPORT, MON.—The foundation-stone of St. Mary's new Catholic Presbytery, adjoining St. Mary's Church, on Stow Hill, Newport, has just been laid. Mr. F. R. Bates is the architect, and Mr. Charles H. Reed the contractor. The new building will cost about 2,500*l.*

LIBRARY, LIVERPOOL.—A new public library has been erected at a cost of 15,700*l.* on a site containing 5,731 sq. yds. of land at the corner of Green-lane and Lister-drive, West Derby. Besides the main entrance for the general public, there is a separate entrance for ladies in Lister-drive, and another for heavy goods in Green-lane. The building is raised on a terrace on three sides. The materials used on the exterior are white Hollington stone and Ruabon red pressed brick, with common brick at the rear of the building, and green Westmorland slates. The principal feature of the building is the tower over the main entrance, which is surmounted by a dome covered with copper. Five of the eight sides of the tower contain a window each, and between them is a buttress which runs down to the ground. The entrance-hall, octagonal in shape, has the floor laid with red tiles, and admission is here gained to the general reading-room, the boys' reading-room, and the lending department. The entrance porch is supported by four Ionic columns. An entablature runs round three sides of the building, about two-thirds of the way up, this entablature being supported by classic pilasters raised on stone tiers. The general reading-room, which is 47 ft. by 26 ft., exclusive of bays, is oblong in shape, having a rectangular bay window at one end projecting 8 ft., while on the right-hand side is a large square bay window in which a seat is fixed. Fourteen tables are provided, as well as two newspaper stands, two magazine racks, and one catalogue table. On the left-hand side are two counters, which communicate with the lending department. The floor is laid with pitch-pine wood blocks, and the walls are covered with glazed tiling. The boys' reading-room is 35 ft. by 26 ft., exclusive of bays, and the ladies' reading-room is 24½ ft. by 20 ft. The lending department is 45½ ft. by 28 ft., and opening out of the department is the librarian's room, 14 ft. by 13 ft. This is the only room in the building in which there is a fireplace, the rest of the library being heated on the low pressure system by means of a vertical boiler, hot water pipes, and radiators. The building is lighted by electricity. All the internal woodwork, with the exception of the floor blocks, is of oak. The library has been erected by Messrs. Brown & Backhouse from designs prepared under the direction of the Corporation Surveyor, Mr. T. Shelmerdine.

COLLEGE BUILDINGS, BRISTOL.—On the 20th ult. the foundation-stone of the new Western College was laid, the site being directly opposite Highbury Chapel, at the junction of Cotham and Hampton roads. Here for some time past the students have been pursuing their studies in the buildings formerly used as a boarding school, and the decision to expend the sum of 12,000*l.* on an entirely new college was arrived at at the last annual meeting. Originally a residential college was proposed, but for various reasons this was abandoned, and it is now determined to erect a building providing the necessary accommodation for lectures, a library, and for the dining together of the students in the hall. On the ground-floor, besides the entrance-hall, will be the inner or staircase hall, common room for students, library, and the large dining and assembly hall, which will be carried up the height of two floors and surrounded by a gallery. At the rear of the hall will be the buttery, kitchens, pantries, and rooms for the housekeeper. A committee-room will also be provided, and the necessary cloakroom and lavatory accommodation. The staircase leading to the first floor is in oak, and on this floor are two large lecture-rooms and one smaller one, the gallery of the hall being also reached from this level. Adjoining the college and communicating with it will be the residence of the principal, which will face and be approached from Cotham-road. Mr. H. Dare Bryan is the architect. Bath stone in random courses will be used for facings, with Gloucestershire stone slates for the roof, the stone mullioned windows being glazed with lead lattice panes. The interior will have floors of wood block, many of the rooms being finished with oak panelling. The buildings, in addition to open fireplaces in the principal rooms, will be heated on the low-pressure hot-water system. The total cost of the new college will be 12,000*l.* Messrs Long & Sons, of Bath, are the builders.

PROPOSED NEW HOTEL, GUERNSEY.—A syndicate has been formed to acquire Castle Carey, Guernsey, the residence of Colonel Carey, with the object of transforming it into a hotel. Castle Carey stands nearly 200 ft. above the sea-level in fine grounds of about four acres, and is built on a foundation of granite and gravel. The existing architectural plan is remarkable and indeed unique, from being shaped and windowed to make the best of the various and extensive views over the sea, the harbour, and the adjacent islands of Jersey, Herm, Jethou, Sark, and Alderney. Its internal fittings are unusual. The main staircase is of oak; all doors on the principal floor are of mahogany; there is elaborate carving in oak, and rich decoration in the ball-room. The chief want is that of sufficient bedrooms, which will be supplied by adding stories. These dispositions leave it practicable to add hereafter, on the western side, Turkish, small swimming, and Aix massage baths, now much recommended by physicians. Both on east and west sides additional sleeping accommodation can be provided at any time without disturbance to the hotel during progress. The present proposal will leave the building complete in itself. The plans of the proposed enlargement have been prepared by Mr. E. R. Robson, of Westminster.

INFIRMARY, FULHAM.—The Board of Guardians have decided to replace the infirmary heating apparatus by a low-pressure system, in which all exhaust steam will be utilised. Messrs. F. H. Medhurst & Lloyd have been appointed to prepare the necessary specifications for the work, the cost of which is estimated at about 4,000*l.*

WORKMEN'S CLUB PREMISES, CAERAU, WALES.—The new workmen's institute and library at Caerau have just been opened. They are built of native stone with red pressed brick facings and Portland stone dressings to road elevations. The entrance is placed at the intersection of the two main fronts, the site having roads on three sides, and is carried up to form a tower about 60 ft. high. Above the entrance is a Portland stone pediment supported on corbels. On the ground floor there is a billiard-room, a smoke-room, and a hall to accommodate 250. On the first floor is a reading-room, a boys' room, and a librarian's office. The heating is by gas-heated steam radiators. The premises were designed by Messrs. E. W. Burnett & Sons, architects, Tondu and Maesteg, and the work was carried out under the superintendence of Mr. Ernest Whitfield Burnett, the contractor being Mr. John Nicholas, Port Talbot. The total cost was 2,495*l.*

FEVER HOSPITAL, MITCHELL LAITHES.—The Joint Infectious Hospital, which has been built at Mitchell Laithes by the authorities of Dewsbury, Heckmondwike, Ravensthorpe, Soothill Upper, and Soothill Nether, is now completed. It consists of an entrance-lodge, and administrative block, three pavilions (including one as an isolation block), with laundry, boiler, and engine-house, containing a disinfecting plant, stable, and ambulance-shed. The buildings are of pitch-faced wall stones from the Morley quarries. Cavity walls have been made, and the whole of the buildings—six in number—are fireproof, and the interior of the hospital walls are plastered with cement, and painted with enamel. The two large blocks each contain thirty beds, and in the isolation block eight are arranged for. These figures include twenty beds for children. Each block is divided into two wards for male and female patients. The buildings are heated by steam from the boiler-house, which is carried through pipes; each block containing two calorifiers, one for warming purposes, and the other for supplying hot water. Grates are fixed under the beds and windows, and radiators will warm the air during winter. Mr. G. A. Fox has had the architectural supervision of the work. The buildings are lighted throughout with electricity, for which plant has been laid down. The furnishing has been carried out by Messrs. Bickers & Co., Messrs. Threadgill & Co., Mr. H. Senior, and Messrs. Senior & McCann; Messrs. Hood being responsible for the electrical arrangements. The various contracts were let to the following:—Mason's work, Mr. John Pickersgill, Chickenley Heath; joinery, Messrs. E. Chadwick & Sons, Staincliffe; slater's work, Mr. G. Hargreaves; plumbing and glazing, Mr. F. Newsome; plastering and concrete, Messrs. J. & S. Wheater, Leeds; iron work, Mr. F. Firth. The total outlay is expected to amount to about 29,000*l.*

INSTITUTE PREMISES, YNISHIR, WALES.—The memorial-stones of the Ynishir Hall and Institute were laid on the 14th ult. The premises will cost altogether about 8,000*l.*, the contract price for the building itself being over 6,000*l.* The hall will provide seating accommodation for upwards of 1,200 people. In addition to this,

there will be a reading-room, billiard-room, games-room, ladies'-room, gymnasium, library, and caretaker's house. The institute is built of native stone, with Forest stone dressings. The contractor is Mr. D. Richards, Ynishir, and the architect Mr. E. Williams, Cardiff.

PIER PAVILION, CLEETHORPES. — A new pavilion has been erected on the pier at Cleethorpes in place of the one that was destroyed by fire in June, 1903. Accommodation is provided for 1,200 people, and the stage measures 30 ft. by 25 ft. Mr. St. George Moore, of Westminster, drew the designs to which the new structure has been built.

FIRE STATION, ISLE OF DOGS.—Mr. Lewen Sharp, the Chairman of the Fire Brigade Committee of the London County Council, recently opened the new Isle of Dogs fire station at the junction of East and West Ferry roads. Mr. W. E. Riley, Architect to the London County Council, was the superintending architect. The cost of the building was 11,300*l.*

OFFICES OF THE WEIR COMMISSION, SUNDERLAND.—A new board-room and offices are being erected for the River Weir Commissioners at the corner of St. Thomas and John streets, Sunderland. The architects for the work are Messrs. Henderson & Hall.

PAROCHIAL HALL, NEWCASTLE.—The new parochial hall which has been erected in Heaton Park-road, Newcastle, in connexion with St. Silas's Church, was opened recently. The hall has cost 2,500*l.*, and will accommodate 900 people. Mr. A. B. Plummer was the architect, and the contractor was Mr. J. L. Miller.

PUBLIC LIBRARY, RAWMARSH.—On a site adjacent to the council hall at Rawmarsh, a new public library has been built. Mr. J. Platts was the architect, and Mr. W. H. Trehern the contractor for the work.

PARK LODGE, NEWCASTLE.—The new lodge at Nuns' Moor, which has been erected for the accommodation of the head-gardener, was recently opened. It is placed at the corner of Brighton-grove and Studley-terrace, and was designed by Mr. Holford, the City Surveyor, the work being carried out under the supervision of the Corporation property department, by Mr. John Craven, contractor, of Newcastle.

WESLEYAN CHAPEL, HEMSWELL, LINCOLNSHIRE.—On Whit Monday the foundation-stones were laid of a new Wesleyan chapel at Hemswell. The building is to be of brick and stone, and is to cost about 1,000*l.* Mr. W. Eyre, Gainsborough, is the architect, and Mr. Elms, Gainsborough, the builder.

CO-OPERATIVE PREMISES, HIRST, NORTHUMBERLAND.—New branch premises have been opened by the Ashington Co-operative Society at Hirst. The building is faced with red pressed bricks, and has North Seaton stone dressings, is lighted by electricity, and is heated throughout by hot-water apparatus. The contractors were Messrs. J. & G. Douglas, of Hepscott, the heating installation being by Messrs. Emley, of Newcastle, and the electric lighting by Mr. John Mills. The work has been carried out from the designs and under the supervision of Messrs. Liddle & Browne, architects, Newcastle.

OFFICES, MANCHESTER.—On Tuesday the new offices of the Lancashire and Cheshire Band of Hope and Temperance Union in Deansgate were formally opened. The building is of red brick and buff terra-cotta, and is in the Georgian style. In the basement is a restaurant, while the Society occupies a large shop on the ground floor for the sale of its publications. A private staircase connects this shop with the Society's offices on the first floor, amongst which are a board-room and a reading-room for country visitors. The remainder of the first and all the second floors are set apart as offices for letting, whilst the whole of the third floor is covered by a large meeting-hall, decorated with faïence work, in connexion with the Society. The builders were Messrs. Wilson & Toft, of Manchester, and the architects were Messrs. Chas. Heathcote & Sons, of Manchester and London, whose designs were selected after competition.

STAINED GLASS AND DECORATION.

ST. JAMES' CHURCH, MORPETH.—The screen in St. James' Church, Morpeth, was designed by the late Mr. Wm. S. Hicks, of Newcastle, on simple lines, with a view to its further adornment. A scheme for its enrichment was prepared by Mr. Wm. Hicks (of Messrs. Hicks & Charlewood), a son of the original architect, which has been carried out by a class numbering fifteen, from the Grammar School Technical Education classes, under the supervision of Mr. Appleby, and has been erected by two of the carvers, Messrs. Stafford and Oram.

MEMORIAL WINDOW, CHICHESTER.—The new east window in Chichester Cathedral, which has been erected by public subscription to the memory of the late Duke of Richmond and Gordon, K.G., was recently unveiled. The window is immediately above the entrance to the Lady Chapel, beneath the floor of which is the ducal vault. It was designed by Mr. C. E. Kemp, and the subject depicted is the Fall and the Redemption.

SANITARY AND ENGINEERING NEWS.

PIER, FELIXSTOWE.—The new pier at Felixstowe, which is being built to the order of the Coast Development Company, is now nearing completion. The length of the structure is 903 yds. from the gangways to the sea wall; the width is 26 ft. clear, and it widens out at the far end to 46 ft., where there is also an extra width of 5 ft. on either side for inclined gangways from the pier head, making a total width of 56 ft. On this portion will be erected shelters, waiting-rooms, pier-master's office, parcels office, and lavatories. The T-head of the pier is 4 ft. below the level of the other portion, and at the sides there are inclined ways for the two streams of passengers who are either leaving the boat or about to embark. On the north side an electric tramway of 3 ft. 6 in. gauge is being fenced off. Mr. A. E. Carey is the company's engineer; Messrs. Fasey & Son, the contractors; and Mr. A. Wheeler, the resident engineer.

THE ROYAL SANITARY INSTITUTE.—At an examination in sanitary science as applied to buildings and public works, held in Manchester, June 23 and 24, 1905, seven candidates presented themselves, and the following three candidates were granted certificates:—J. Caffrey (Belfast); W. J. Dunning (Colwyn Bay); J. G. Findlay (Glasgow).

FOREIGN.

BUILDING REVIVAL IN ROME.—Reporting on the trade of Central Italy for the year 1904, Mr. C. C. Morgan, the British Consul, remarks that the improved economic conditions of Italy have helped Rome considerably in its revival after a critical period. Traces are everywhere visible of the altered state of affairs. Large buildings all over the town, and in the immediate neighbourhood, which had been left in an unfinished state for want of capital, have now been rendered habitable. The works connected with the municipal "Piano Regolatore," or general building improvement of the town, are in a very advanced stage, greatly to the improvement of the local sanitary conditions and to the convenience of traffic. The embankments, bridges, public buildings and gardens, sewerage, etc., forming part of the said "Piano Regolatore," have been constructed, and on the whole Rome now presents quite a different appearance. There is a growing public feeling that, as far as possible, the district should be emancipated from its traditional dependence on the influx of foreign visitors and rendered self-supporting, as in the case of the chief capitals of the world. The presence of visitors is subservient to so many contingencies, and the season during which their stay is limited to so short a period that the policy of giving the utmost economic independence to the city cannot but be encouraged. Visitors will continue to be drawn by the peculiar attractions of old Rome, and the money spent by them during their stay—a considerable sum—will, if anything, help to foster the industrial revival of the district. Several years ago Rome was affected by a building crisis which involved considerable loss of money, and put a sudden stop to the building mania. Consequently a great many houses in course of construction were left unfinished. Of late, however, owing to the demolition for the sake of modern sanitary improvements of a great number of houses, the need has been felt of new buildings to meet the requirements of the increasing population. In order to encourage the construction of houses in Rome the municipality have recently enacted certain regulations dealing with the matter. Among the facilities granted to would-be landlords one of the most important is the exemption fom taxes for a period of ten years on new buildings fit for habitation. Houses intended to be used as hotels or pensions, as well as those which are totally or partly inhabited by landlords, are excepted, and will not enjoy the privilege of exemption. That benefit will be extended to those buildings which were left unfinished at the time of the crisis, provided steps for their completion be resumed within three years, and carried out previous to the expiration of double that period from the date of the regulations in question. The privilege of exemption from payment of the tax is limited to houses let to private individuals, provided that the yearly rent payable for each flat or apartment does not exceed 48*l.*

GERMANY.—The new residence for the Minister of Commerce, in the Leipzigerplatz, Berlin, was designed by the architects Herr P. Kieschke and Herr E. Fürstenan.——The Town Hall at Eberswalde, designed by the architects Köhler & Franz, is completed.——The new building which has been added to the Law Courts at Munich, designed by Professor Friedrich von Thiersch, is completed; the building cost 1,600,000 marks.——In the competition for designs for the artistic decoration of the "Kaiser Wilhelm" bridge at Breslau the first premium (2,000 marks) was awarded to Herr Martin and Dr. Weyrauch, the second (1,500 marks) to Herr Wilhelm Härter, the third (1,000 marks) to Herr Albert Biebendt, and the fourth (500 marks) to the architects Wedemann and Distel.——The ancient Town Hall at Alsfeld is to be restored to its original form.——In the building of the Law Courts at Schweinfurt the newly-discovered "red green" Bavarian marble was employed for the first time; this marble is totally different to the foreign marbles that have hitherto been imported at considerable expense, and should prove a valuable aid in the decorative treatment of buildings in Bavaria.——Professor Billing has undertaken the work of rebuilding the Town Hall at Kiel.

SOUTH AFRICA.—Tenders have been invited for the erection of (*a*) a club-house in Fox-street, Johannesburg, for the Johannesburg Club; (*b*) a new school building at Jagersfontein, Orange River Colony; (*c*) a post-office at Roodepoort, and (*d*) certain internal structural alterations at the Port Elizabeth Public Offices.——In Johannesburg, during the fortnight ended May 15, 147 plans of proposed buildings were approved. The estimated cost of the buildings is 109,900*l.*, of which amount 580*l.* is for drainage work. Among the plans is one for a new building for Messrs. Abbott & Co., to be erected in Kerk and Von Welligh streets, at an estimated cost of 18,000*l.* ——The new Harbour Board Offices in Port Elizabeth were lately inaugurated with some ceremony. The Mayor proposed the health of the architects (Messrs. Jones & McWilliams) and the builders (Messrs. J. Kohler & Sons). Mr. Victor T. Jones and Mr. C. Kohler suitably responded.

CEMENT MANUFACTURE ABROAD. — Of the numerous reports from His Majesty's consuls abroad which have reached the Foreign Office within the last fortnight, several contain more or less interesting references to the cement trade. Subjoined are summaries of some of these references:—

Warsaw.—The sale of cement was considerably smaller in 1904 than in the previous year, having fallen from 1,000,000 barrels to about 700,000 barrels. The reasons why the cement industry did so badly in 1904 were that large Government orders were cancelled when the Russo-Japanese war broke out, and partly that the execution of the different building enterprises proposed by the Municipality of Warsaw were postponed. In consequence some cement works were obliged to close completely, and the others worked only for a few months in the year.

Stettin.—The year 1904 was not a very successful one for the cement industry. The very low prices ruling caused a considerable increase in the sales, but, although the demand remained good, prices did not revive owing to over-production in certain parts of Germany. The total export of cement from Stettin by sea in 1904 was 88,869 tons, as compared with 89,955 tons in 1903. The quantity shipped to the United Kingdom was 171 tons in 1903, and 135 tons in 1904. The small decrease in the exports is said to be due to the improvement in the cement produced in other countries, which are now in a better position to supply their own demand. The export to the United States of America is also handicapped by the high import duty levied on cement. The following are the cement factories in this district:—"Kraft," Portland-Cement-Fabrik (Eisenwerk Kraft), Stettin-Kratzwieck; Pommersche Portland-Cement-Fabrik "Quistorp," Stettin; Portland-Cement-Fabrik "Stern," Stettin; Stettin-Bredower Portland-Cement-Fabrik, Stettin-Bredow; Stettiner Portland-Cement-Fabrik, Stettin-Züllchow; Stettiner Portland-Cement and Thonwaren-Fabrik "Merkur," Stettin. The cement produced at the Kraft Ironworks is composed of slag sand previously freed from manganese and other impurities; it is then mixed with lime, formed into bricks, burnt like "Portland" cement, and finally ground. The slag cement fetches the same price as "Portland," which it equals in quality.

Bilbao.—At one time Portland cement was the only kind known and employed in these parts, but it has now almost disappeared from the market, being only in demand for works requiring special strength and consistency. It has been replaced by the French, Belgian, and German productions, owing to their lesser cost; the difference in price compensating for the better quality of the British article. The Bilbao harbour and sanitary works, which made use of considerable quantities of Portland cement, also supplied their wants from Boulogne, owing chiefly to the contractors being of French nationality, and engineers found it to be of sufficiently good quality for their purposes. Various consumers bring so-called Portland cement *viâ* Marseilles from Povin de la Farge for the paving of entrance halls and stairways, and for enamelling baths, etc., but the largest quantity comes in from Belgium, and is said to be sent in barrels, not alone imitating the size and weight of the British article, but bearing also British labels, and costing 3 to

4 pesetas less. Great use is now made of hydraulic lime manufactured in this province for works not requiring special care or duration, and it is sold at 2 pesetas 15 c. (1s. 3d.) per bag of 69 kilos (152 lb. English). One of the firms making hydraulic lime now produce Portland cement which is said to be of a fair quality, and it sells its total output—about 15,000 tons a year. The production of hydraulic cement in Guipuzcoa by the ten existing works varies from 85,000 to 90,000 tons per annum; the amount brought into Bilbao in 1904 reached 9,126 tons. The only other places in Spain producing hydraulic cement are Barcelona and the Balearic Islands. Bilbao architects are introducing "Ciment Armé" for building purposes, and a French company is in existence here solely engaged in this business. The quantities of Portland cement imported from France and Belgium in 1904 were, respectively, 2,279 and 5,662 tons.

Iceland.—Cement has been imported to Iceland as follows:—

Year.	From Denmark. Barrels.	From United Kingdom. Barrels.
1899	1,002	285
1900	722	197
1901	1,478	155
1902	1,942	158

The figures for 1903-4 have not yet been ascertained.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Arthur Stratton, architect, has removed his offices from 2, Vernon-place to 16, Hart-street, Bloomsbury-square, W.C.——Mr. John C. Stockdale, architect, has removed his offices from 2, Vernon-place to 16, Hart-street, Bloomsbury-square, W.C.——Mr. Geoffry Lucas, architect, has changed his London address from 2, Vernon-place to 16, Hart-street, Bloomsbury-square, W.C.; and also has an office at 23, Bram-street, Hitchin (Herts).——Mr. Howard Ince, architect, has removed his offices from 35, Lincoln's-inn-fields to 53, Berners-street, W.

PORTLAND CEMENT WORKS IN CATANIA.—Mr. Elford, British Vice-Consul at Catania, writes:—A company has been formed (capital 6,000*l.*) for the manufacture of Portland cement, there being an abundance of the necessary materials—viz., limestone and clay—in the neighbourhood. The kilns are on the Dietzsch system. The mills, which are of the most modern description, are from Germany, and the motive power, consisting of two gas engines, each of 90 h.-p., using anthracite gas, are of Italian manufacture. The production will be about 30 tons a day, which can be increased if necessary.

WESTERN OPHTHALMIC HOSPITAL, MARYLEBONE-ROAD, AND LILLESTON MANOR.—The Committee of the hospital have appointed Mr. W. Harvey to prepare plans and designs for the rebuilding of the hospital in Marylebone-road at the corner, west, of Circus-street. The hospital was established there, in what was then the New-road, in 1856. The existing building consists of an old house which by one account had been the later manor-house of Lilleston, corrupted into Lisson. Lilleston, covering five hides in Ossulston hundred, is cited in the Domesday Survey. Lilleston passed to the Knights Hospitaller of St. John of Jerusalem; in 1512 Prior Docwra granted a lease, which did not include Lisson-green, for fifty years to John and Johan Blennerhasset of a farm—being "parcel of the manor of Lilestone"—270 acres in extent, which their executors sold in 1532 in reversion to Lord Chief Justice Sir William Portman, Bart., who afterwards acquired the fee-simple of the land, which now forms the estate in Marylebone parish of Lord Portman. The place-names enumerated in Prior Docwra's lease are well worthy of the notice of students of London topography. The Order of St. John having been suppressed, the greater part of the manor was granted in 1548 to Lord Willoughby and Thomas Heneage, from whom it eventually passed to Capt. Lloyd, who sold the property in several lots in 1792. In June, 1901, the Borough Council proposed to take a site of 28,000 ft. superficial between Circus and Wyndham streets, Marylebone-road, for a county hall.

PHŒNIX PARK, DUBLIN.—It is stated that the Commissioners of Woods and Forests have purchased a tract of land which extends over a distance of about 1¼ miles along the river Liffey, and abuts upon Phœnix Park. The purchase will preserve the view of the river from the park, and will form a considerable addition to the latter.

FOREIGN PATENT SPECIFICATIONS.—The Patent Office has issued a second edition of the Key to the Patent Specifications of France, Germany, Austria, Norway, Denmark, Sweden, and Switzerland, which are in the library of the Patent Office. It is published at the Patent Office, 25, Southampton-buildings, W.C.

INCORPORATED CHURCH BUILDING SOCIETY.—This Society held its usual monthly meeting on Thursday, the 22nd ult., at 7, Dean's-yard, Westminster, Lieut.-Colonel the Hon. G. H. W. Windsor Clive in the chair. Grants of money were made in aid of the following objects, viz.:—Building new churches at Borough Green, The Good Shepherd, near Wrotham, Kent, 75*l.*; Leeds, S. Margaret, 120*l.* for the first portion, and Port Tennant, S. Stephen, near Swansea, 170*l.* for the first portion; towards rebuilding the Abbey Church of S. Mary the Virgin, Nuneaton, Warwickshire, 120*l.*, and Nevin, S. David, Carnarvon, 80*l.* in lieu of a former grant of 60*l.*, and towards enlarging or otherwise improving the accommodation in the churches of Felling-on-Tyne, Christ Church, Co. Durham, 40*l.*, Great Ellingham, S. James, near Attleborough, Norfolk, 25*l.*, and Little Ilford, S. Michael and All Angels, Essex, 120*l.*, making in all 370*l.* Grants were also made from the Special Mission Buildings Fund towards building mission churches at Chesterton, S. Andrew, near Cambridge, 15*l.*; Chelsfield, Kent, 25*l.*, and Tudhoe Grange, The Venerable Bede, Co. Durham, 30*l.* The following grants were also paid for works completed: Foulridge, S. Michael and All Angels, near Colne, 100*l.*; Barton Mills, S. Mary, Suffolk, 30*l.*; Brawdy, S. David, Pembs., 25*l.*; Purse Caundle, S. Peter, near Sherborne, 10*l.*, and Brondesbury, S. Anne, Middlesex, 225*l.* In addition to this the sum of 204*l.* was paid towards the repairs of eleven churches from trust funds held by the society.

ECHAILLON STONE AND MARBLE.—Mr. Lewis, British Vice-Consul at Grenoble, France, writes:—An important and growing business is being done here in Echaillon marble and stone. The quarries have supplied lately several important contracts for hotels and other buildings in London. The quality is very fine and durable. This material has been used for the decoration of the Paris Opera House and for a considerable number of statues throughout France, as well as public buildings. The industry is likely to grow in importance.

LIBRARY, YORK MINSTER.—On June 19 was reopened the old library which had latterly served as the singers' school and for the storage of muniments appertaining to the Cathedral and the Consistory Court. Fifty years ago the books were housed in a chapel of the old palace; the school having been recently removed, the singing-room was repaired and refitted for the reception of the valuable collection of Bibles owned by the Dean and Chapter. The building will henceforth be known as the Bible Library, to which access will be afforded to students.

CHURCH HISTORY EXHIBITION, ST. ALBANS.—For the exhibition at St. Albans some interesting exhibits have been classified and arranged by Mr. St. John Hope, comprising the silver-gilt paten, a very early specimen, lent by the Dean and Chapter of Worcester, and the fragments of a Saxon censer. The Reverend F. W. Galpin lends his collection of old musical instruments at one time used in parish churches; the crozier-head, chalice, and ring found in the tomb of Bishop Richard de Carew, of St. David's, some absolution crosses from the Bury St. Edmund's Museum, and the Steeple Aston and Chipping Campden copes, with the Dunstable pall, are also contributed.

YORKSHIRE FEDERATION OF MASTER BUILDERS.—The Yorkshire Federation of Master Builders met at Sheffield on the 23rd ult., under the presidency of Mr. A. Moulson, of Bradford. Other members present were:—Alderman Judge (Wakefield), Councillor Dawson (Huddersfield), Councillor England (Barnsley); and Messrs. P. Rhodes, W. T. Ledgard, J. Atkinson, G. W. Wilson, and J. Davidson (Leeds), with representatives from Halifax, Dewsbury, Huddersfield, and Sheffield. Mr. J. Biggin (Sheffield) was presented with a gold snuff-box, a carved oak timepiece, and an illuminated address, to mark appreciation of services rendered to the Federation. About ninety members of the Federation journeyed to Grindleford, *viâ* Froggatt Edge, tea being provided at the Maynard Arms Hotel.

PROPOSED MUNICIPAL BUILDINGS, SMETHWICK.—On the 16th ult., Mr. W. A. Ducat, on behalf of the Local Government Board, held an inquiry at the Public Buildings, Smethwick, into the application of the town council to borrow 15,000*l.* for the erection of the new municipal buildings on a site adjoining the Victoria Park, at Bearwood Hill. The Town Clerk (Mr. W. Shakespeare) explained that the present council chamber was small, and abutted upon the main road, so that the business of the borough had to be conducted in a room too small for the purpose. The estimated cost of the new buildings was 17,000*l.* The details of the scheme were explained by Mr. F. J. Gill, the architect.

ELECTRICITY UNDERTAKING, SOUTH SHIELDS.—An application by the South Shields Corporation for sanction to borrow 15,625*l.* for the purpose of carrying out certain extensions at the electricity works at Holborn, to meet the requirements of the electric tramway service, was the subject of a Local Government Board inquiry, conducted by Mr. M. K. North, M.Inst.C.E., on the 20th ult., at the Town Hall, South Shields. The Town Clerk (Mr. J. Moore Hayton) said that the object was to place additional plant in the existing power station, so that it might be available for the supply of electric energy for the purposes of the tramways which the Corporation were constructing. The estimated cost of the work in the electrical engineers' department was 14,425*l.*, and there would be, in addition, a little architectural work, to cost, it was estimated, 1,200*l.*, mainly for the foundations, the engine, dynamo, the construction of the switchboard platform, etc. Mr. James Albert Cawchra, Borough Electrical Engineer, gave a detailed explanation of the work which had been carried on, the progress which had been made since the commencement of the electricity undertaking, and the additions it was proposed to make. The inquiry was afterwards adjourned.

PULPIT, EAST BUDLEIGH, DEVONSHIRE.—East Budleigh Church, dedicated to All Saints, and of XVth century foundation, contains a pulpit which was designed by Mr. G. H. Fellowes-Prynne, architect, of London, in 1894, and was placed there in that year as a memorial to the late Mr. R. H. Lipscombe, of that parish. It was made by Messrs. Harry Hems & Sons, of Exeter, who have just completed an additional group for the pulpit, under the direction of Mr. Prynne. It is modelled and carved in high relief, and is a representation of St. John the Baptist preaching in the Wilderness. The same firm have also added two angels, each in an attitude of adoration. These additions were put in place on the Vigil of the Feast of Nativity of St. John the Baptist.

CARPENTERS' COMPANY.—At an examination in carpentry and joinery, held at the Carpenters' Hall on June 14 to 17, *Silver Medals* were awarded to the following candidates:—Caleb S. Hill and Wm. Ambrose; *Bronze Medals* were awarded to Wm. E. Saunders, Frank Leeks, J. Edw. Jones, Wm. F. Grove, and Sydney Foley; *First-Class Certificates* to Hy. Parnell, C. H. Hancock, John McLennan, W. T. W. Smith, F. J. Girling, Walter Harvey, E. G. Claydon, G. Shaw, Chas. A. Brown, E. Kerridge, Hy. Eustice, and Alf. Jno. Pyle; *Second-Class Certificates* to Jas. C. Finch, L. P. Roberts, E. Spark, F. K. Martin, E. E. Syms, A. P. Tribe, C. H. Simons, A. J. Smith, J. E. Sudds, J. R. J. Savage, J. H. Thomas, John Cordiner, J. H. Wood, A. H. Smith, J. F. Dowsett, G. H. Parker, A. Waddington, A. Pyle, H. A. Fox, J. Powell, F. W. Barnacott, H. G. Pritchard, and Jas. Raymond.

THE NEW TECHNICAL DICTIONARY.—In the compilation of the "Technolexicon" of the Society of German Engineers, a universal technical dictionary in English, German, and French, commenced in 1901, about 2,000 firms and individual collaborators at home and abroad are assisting at present. Up to now 2,700,000 word-cards have been collected. To these will be added the hundred thousands of cards that will result from the working-out of the original contributions not yet taken in hand. The contributions have been called in since Easter, 1904, and most of them have already come in. The Editor-in-Chief will be pleased to give any further information wanted. Address: "Technolexicon," Dr. Hubert Jansen, Berlin (NW. 7), Dorotheenstrasse 49.

CEMENT IN SWEDEN.—According to Mr. Consul Macgregor's annual report, there are in Sweden five cement factories which during 1904 sold altogether 753,000 barrels, each weighing about 374 lbs. net. Of this amount about 125,000 barrels were exported, some of it to South Africa. There is one other cement factory in addition, respecting which no particulars are forthcoming. The import during 1904 was 59,000 barrels, and this material is now used about twice as much as it was only ten years ago. Water power is much used in Sweden, and cement is employed for dams and turbine houses, which formerly were built of granite. During recent years almost all such work has been constructed of concrete. It has well withstood the influence of frost even in the colder districts of the country, but parts of such buildings as are exposed to shocks from floating ice blocks are still faced with granite.

CAPITAL AND LABOUR.

THE EDINBURGH JOINERS' STRIKE.—The strike of the Edinburgh joiners, which has lasted for over fourteen weeks, has been brought to an end. This result is largely due to the efforts of Lord Provost Sir Robert Cranston, whose proposals have been accepted by the parties. In accordance with previous arrangement, the conference between delegates of the employers and the workmen—which was adjourned to admit of the delegates consulting those whom they represented—was resumed on the 27th ult., in the Council Chambers—the Lord Provost presiding. As formerly, the proceedings were conducted in private. It is understood that after a few minutes' talk, both masters and employees heartily agreed to accept the proposals made by the Lord Provost. This brings the strike to an end. The differences which existed were in the first instance as regards wages, and in the second as regards the period of the agreement between masters and operatives. The agreement in former years expired on April 15. The employers thought this an unfair time to them, and they further desired to reduce the wages to 8½d. per

hour. The proposals of the Lord Provost were that wages should remain at the present rate of 9d., and that the date of the by-laws be altered from April 15 to June 1; further, that this arrangement should be binding for two years, in order that a fair trial might be given to it by both sides. The following is the text agreement as signed by the Lord Provost on behalf of the parties:—"The following gentlemen as representing the Edinburgh, Leith, and District Building Employers and Allied Trades Association, viz.:—Messrs. Knox, Kennedy, Calder, Robb, Montgomery, Watson, and Lownie, and the following gentlemen, representing the Edinburgh and Leith District Joiners' United Trades Committee, viz.:—Messrs. Lawson, Gall, Mowat, Patullo, Yorston, Pringle, and Clazie, met, and the following agreement was come to:—That the time notice be altered from April 15 to June 1 (this notice as stated in Rule 7 of the existing by-laws), and that the wage be fixed at 9d. per hour, this agreement being binding on both parties from now till January 1, 1907."—*Scotsman*.

Legal.

ACTION BY A BRICKLAYER.

THE case of Jackson *v.* Waterhouse came before the Court of Appeal, consisting of the Master of the Rolls and Lords Justices Romer and Mathew, on the 28th ult., on the application of the defendant, for judgment or new trial on appeal from verdict and judgment at trial before Mr. Justice Walton, without a jury, at the Manchester Assizes.

The plaintiff, a bricklayer, of Chisworth, sued the defendant, Mr. Joseph Waterhouse, of the Shuttleworth Bleach Works, near Manchester, to recover damages in respect of personal injuries caused through the alleged negligence of the defendant and his servants. It appeared that in January, 1904, the defendant was about to erect at his works certain apparatus known as "Green's Economisers," and he entered into a contract with the plaintiff whereby the latter agreed to do all the necessary bricklayer's work. The plaintiff alleged that on February 15, while assisting the defendant to lift an iron plate, weighing between 8 and 10 cwt., by means of tackle supplied by the defendant, a part of the tackle broke, and plaintiff's hand was crushed by the falling iron. As a result the plaintiff lost the use of his hand, and had been unable to follow his occupation as a bricklayer. At the trial the jury found that under the contract it was the duty of the defendant to supply the tackle; that the eye-bolt—the part of the tackle which broke—was unfit for the purpose for which it was to be used; that the defendant could have known this had he made a reasonable careful examination of the bolt; and that the defendant's son told the plaintiff that the bolt was fit for use for the purpose of lifting the iron plate. The jury assessed the damages at 175*l*., and on their findings his lordship entered judgment for the plaintiff for that amount. The defendant now appealed on the ground that there was no evidence to support the finding of the jury.

In the result their lordships, without calling upon counsel for the respondent, dismissed the appeal with costs.

Mr. J. Overend Evans appeared for the appellant; and Mr. Taylor, K.C., and Mr. Ambrose Jones for the respondent on the appeal.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

12,325 of 1904.—R. M. RYAN: *Domestic Fire-grate.*

This invention consists of a round metal grate, with a single or double axle, which revolves in friction wheels or ball bearings, or both. The axle is supported by a vertical plate behind the grate, or on a stand with legs projecting in front sufficiently far to steady the grate.

12,849 of 1904.—D. M. NESBIT: *Ventilators.*

This invention relates to ventilators of the type wherein an air duct leads from the exterior of a building, through the wall thereof, to the interior, the outer end or entrance to the duct being covered by a protecting grating and the inner end or exit of the duct being covered by a louvred grating by which the air current may be regulated. The invention consists in providing the inner end of the duct with a removable panel which is preferably combined with a pan so that when the panel is removed the duct can be cleaned out and the pan carries away the accumulated rubbish. In carrying out the invention according to one modification the inner end of the duct is partly covered with the usual louvred grating, and partly with a cast-iron panel. The latter is disposed below the former and made removable. The iron framing is preferably formed with an overhanging lip, or is grooved so as to receive and retain the upper edge of the panel when the latter is slipped in place. It can then be readily removed to facilitate cleaning of the duct by simply tilting it slightly so as to allow the upper edge to clear the lip.

14,502 of 1904.—G. P. WALLIS and J. R. BROADLEY: *Brick-making Machinery.*

This invention relates more especially to what is usually termed a combination brick-making machine where three processes are combined in one, such as pugging the clay, moulding the clots, and finally pressing the moulded clots into bricks. According to the invention the pistons in the cylinder moulds are placed in such a way that before the piston is allowed to move, the cylinder mould is directly opposite the pugmill opening. The clay consequently flows evenly in a continuous column into the cylinder mould, and thus prevents any curling or lamination. The method of fixing the piston in the proper position in the cylinder may be by means of two arms projecting at each end of the piston. These arms may be held in position by segments fixed to the frame-sides of the machine or to any suitable part of the machine. As the cylinder revolves and the proper position is reached, the projecting arms of the piston slide on the segments in such a way as to keep the top of the piston linable with the periphery of the cylinder, no mould being formed until the piston is allowed to move. At the completion of the movement of the cylinder, the segments keeping the piston in its place are terminated, allowing the piston free movement.

1,297 of 1905.—A. A. PERRIER: *Window and like Sashes or Frames.*

A support for the glass of greenhouses or other structures, windows, doors, and the like, consisting of a bar or bars of T or ⅂-cross section, made of ordinary or armoured glass, porcelain, or like inoxidising translucent or non-translucent material, adapted to be supported from the outside, say, for instance, by clamps engaging with beads on the support, whereby the exposed surface, on one side, consists solely of glass, porcelain or like inoxidising and readily cleansing material.

3,073 of 1905.—B. E. BECHTEL: *Brick, Block, or Tile Cutter.*

A brick, block, or tile cutter, consisting in the combination of a travelling-table comprising loosely-joined sections, each section having reel operating means adjacent its rear portion, and a cutting reel having cutting wires, and engaged and rotated by said means, whereby each wire performs its cut over an intermediate portion in the length of a section, preferably so that each brick rests on two sections and bridges the point between the same, in such wise that each brick projects forwardly on to the section in front for a distance less than one-half the length of the brick.

6,260 of 1905.—A. ILLIDGE: *Stays such as are used with Casements, Fanlights, and the like.*

A stay such as used with a casement, fanlight, or the like, of which the tongue of the connecting-piece which is pivotally connected with the stay bar or of which the tongue of the stay bar which is pivotally connected with a jaw of the connecting-piece, as the case may be, is strengthened by a portion of the connecting-piece or of the bar which is of a greater width than the tongue, and which passes from the body of the connecting-piece or bar partially round the tongue and the forward edge of which is utilised as the rest for the bar, or otherwise to stop the downward movement of the bar below a predetermined point.

15,957 of 1904.—A BRYAN: *Floor Tiles for Bacteria Beds, Filter Beds, and analogous purposes.*

A floor tile or drainage conduit section for sewage bacteria beds, filter beds and the like, consisting of an arched top (with or without end spacing studs or projections) combined with an integral or attached bottom or floor slab, which is extended beyond one or both ends of the top part so as to provide a continuous bottom, channel, or gutter, and form drainage slots or clearances between the tops of the sections when a series of them are laid together end to end.

314 of 1905.—E. B. JARVIS: *Reinforced Concrete.*

A truss for concrete structures comprising a plurality of bars of different lengths located one above the other and having obliquely set ends, the shortest of said bars being located in the middle of the other bars in combination with slotted plates through which the different bars extend, located in proximity to the obliquely set ends, the slotted plates having a comparatively deep portion extending underneath the lowermost bar.

476 of 1905.—B. SINGER: *Composition of Matter for Laying and Absorbing Dust.*

This invention relates to a substance adapted to be placed upon the floors of rooms and other surfaces for laying and collecting or absorbing the dust thereon preparatory to and during sweeping. The invention consists of a composition of matter containing a suitable oil or oily substance whose office is to absorb or collect the particles of dust, a vehicle or carrier for absorbing the oil, and for which the oil will have a greater affinity than it has for the floor or surface with which it comes into contact, and which carrier will therefore retain the oil and prevent it from damaging such surfaces, a non-freezing absorbent whose office is to collect the oil absorbent into small or minute bodies and at the same time prevent the entire mass from freezing at ordinary atmospheric temperatures as well as itself serving as an absorbent for the oil. Such principal ingredients of the composition are improved by the addition of clean sand, preferably white silicia, about 60 per cent. of which is employed, and which serves to cut the mass or break it up and prevent the small bodies from adhering together, and is still further improved by the addition of sawdust, which intermingles with the other particles and gives body to the mass, reducing its specific gravity or weight and better adapting it to be swept across the floor.

1,824 of 1905.—J. W. HOWORTH (BUHLER BROS.) *Edge Runners and Moulding Presses.*

A machine comprising an edge runner mill and one or more moulding presses, the arrangement being such that the mould press is mounted under a collecting-plate secured on the vertical shaft of the edge runner mill, and has a common horizontal main shaft which transmits its motion both to the edge runner mill and to the mould press by means of gearing interposed between the main shaft and the vertical shaft, as well as between the latter and mould press, or between the main shaft on the one hand and the edge runner mill or mould press respectively on the other hand, and an arrangement so that the gears for transmitting the motion of the main shaft to the edge runner mill or mould press respectively are arranged so that they can be put out of engagement in order to be able to drive each machine separately.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

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"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China Ceylon, etc., 26s. per annum. Remittances (payable to J MORGAN) should be addressed to the Publisher of "THE BUILDER," Catherine-street, W.C.

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SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

June 13.—By DREWEATT & WATSON (at Reading).	
Speen, Berks.—"Woodspeen Farm," 153 a. 0 r. 34 p., f., y.r. 130*l.*	£4,000
June 15.—By MADDISON, MILES, & Co. (at Kessingland).	
Kessingland, Suffolk.—Freehold farmhouse and 17 a. 0 r. 22 p.	440
"Calves Pightle," 2 a. 1 r. 13 p., f.	118
By T. E. AYRE & Co. (at Dulverton).	
Morebath, Devon.—"Sharp Close," 10 a. 3 r. 10 p., f.	490
"Whitehall Farm," 70 a. 1 r. 11 p., f.	2,140
"Vackhill Enclosures," 33 a. 3 r. 15 p., f.	1,170
"Gilbert's Cottage" and 1 a. 0 r. 19 p., f.	150
"Hawkridge Farm," 44 a. 1 r. 22 p., f.	425
June 16.—By STEVENSON & ALEXANDER (at Exeter).	
Tiverton, Devon.—The Chevithorne Barton Estate, 893 a. 1 r. 35 p., f.	21,000
By N. EASTON & SON (at Hull).	
Elloughton, Yorks.—"Elloughton Lodge" and 5 acres, f	2,100
Cottingham, Yorks.—A freehold close, 11 acres	760
By J. & W. HEATHCOTE (at Derby).	
Breadsall, Derby.—"Priory Flatte" and 62 a. 1 r. 13 p., f.	5,000
June 17.—By WHITE, BERRY, & TAYLOR with FENN & Co. (at Colchester).	
Little Clacton, Essex.—"Cooke's Green Farm," 214 a. 2. r. 18 p., f. and c., y.r. 125*l.*	2,500
By J. & W. HEATHCOTE (at Ashbourne).	
Ballidon, Derby.—"Ballidon Moor Farm," 273 a. 1 r. 11 p., f. (including timber)	3,850
By J. & R. EVE (at Bedford).	
Wootton, Beds.—"Wootton Green Farm," 269 a. 1 r. 5 p, f.	4,000
"Acrey Field," 27 a. 3 r. 14 p., f.	950
Marston, Beds.—Freehold cottage and 0 a. 1 r. 21 p.	140
June 19.—By JOHN BOTT & SONS.	
Herne Hill.—180, Railton-rd., u.t. 61 yrs., g.r. 6*l.*, p.	325
By H. & R. L. COBB.	
West Thurrock, Essex.—"Davy Down Farm," 80 a. 2 r. 39 p., f., p.	2,000
Meopham, Kent.—"David-st. Farm," also "Rose Mount," 118 a. 0 r. 24 p., f., p.	2,400
"Priesthood Farm," 7 a. 2 r. 13 p., f., p.	310
"Whiteleaf Enclosure," 10 acres, f., p.	230
Hoo St. Werburgh, Kent.—"Beluncle Farm," 193 a. 3 r. 4 p., f.	7,000
"Tunbridge Hill Farm," 130 a. 1 r. 20 p., f.	2,600
By E. J. GALE.	
Mayland, Essex.—"Nipsell's Farm," 616 a. 1 r. 18 p., f., p.	4,675
By GILBERT & HOW.	
Finsbury Park.—140, Stroud Green-rd., u.t. 62½ yrs., g.r. 7*l.*, e.r. 50*l.*	495

By NICHOLAS, DENYER, & CO.
Balham.—59, 59A, 61, and 61A, Dornton-rd., u.t. 92 yrs., g.r. 17*l.*, y.r. 146*l.* £980
By WEATHERALL & GREEN.
South Kensington.—87, Thurloe-pl. (s.), f., y.r. 200*l.* 4,800
Langley, Bucks. Bath-rd., enclosure of land, 4 acres, f. 380
By WILKINSON, SON, & WELCH (at Brighton).
Brighton.—37, Beaconsfield-villas, and ¼ of an acre, f., p. 1,350
47, Clarendon-rd. (s.), f., p. 600
June 20.—By BATCHELAR & SON.
Warlingham, Surrey.—"Melrose" and a ¼ of an acre, f., p. 900
Westhall-rd., "The Hill" and ¼ an acre, f., o.r. 75*l.* 1,200
Marks-rd., "Marston" and 3½ acres, f., p... 2,000
Thornton Heath.—157, Ecclesbourne-rd. (s.), f., y.r. 45*l.* 760
By DAVID BURNETT & CO.
Hackney.—62, Gore-rd., u.t. 48½ yrs., g.r. 7*l.*, y.r. 40*l.* 330
5, Speldhurst-rd., u.t. 37 yrs., g.r. 5*l.*, y.r. 32*l.* 250
Sydenham.—11, 12, 13, 14, and 15, Watlington-gr., u.t. 61 yrs., g.r. 17*l.* 10s., w.r. 104*l.* 555
Watlington Cottages, f.g.r. 10*l.*, reversion in 74½ yrs. 245
Kent House-rd., f.g.r. 10*l.*, reversion in 74½ yrs. 245
Caledonian-road.—No. 475, u.t. 61½ yrs., g.r. 9*l.*, y.r. 48*l.* 460
By DEBENHAM, TEWSON, & CO.
Cricklewood.—6, 7, and 8, Ashford-rd., u.t 96½ yrs., g.r. 14*l.* 5s., y.r. 104*l.* 825
By WALTER HALL.
Brondesbury.—82 to 88 (even), Hanover-rd. (carcases), u.t. 96½ yrs., g.r. 28*l.* 800
By H. S. HAWLEY & CO.
Regent's Park.—3, Cumberland-ter., and 3, Cumberland-mews, u.t. 20 yrs., g.r. 38*l.*, e.r. 180*l.* 1,150
By G. HEAD & CO.
Camden Town.—79, James-st., u.t. 44½ yrs., g.r. 10*l.*, q.r. 32*l.* 340
By E. H. HENRY.
Battersea.—31, Meyrick-rd., u.t. 42 yrs., g.r. 4*l.*, w.r. 35*l.* 2s. 160
20, Knox-rd., u.t. 62 yrs., g.r. 4*l.* 10s., w.r. 31*l.* 4s. 165
By MARLER & CO.
Chiswick.—127, High-rd. (s.), c., y.r. 35*l.* 645
By A. H. TURNER & CO.
Paddington.—7, Bishop's-rd. (s.), and 1, Sheldon-st. (s.), u.t. 33½ yrs., g.r. 40*l.*, y.r. 226*l.* 900
By ROGERS, CHAPMAN, & THOMAS.
Belgravia.—58, Elizabeth-st. (s.), a profit rental of 91*l.* 8s. 8d. for 18½ yrs. 400
Chelsea.—20, Slaidburn-st., u.t. 49 yrs., g.r. 4*l.* 10s., w.r. 29*l.* 18s. 155
Fulham.—33, Barclay-rd., u.t. 56½ yrs., g.r. 6*l.* 10s., y.r. 36*l.* 380
Balham.—97, 99, 116, 120, and 122, Balham Park-rd., f., y.r. 277*l.* 10s. 4,210
By STRAKER & SON (at Abergavenny).
Llanvihangel Crucorney, Mon.—"Penydre Farm" and "Sun Meadows," 124 a. 0 r. 30 p., f. 3,000
"Maerdy Cottage," "Yew Tree Cottage," "Crossway Cottages" (two), and garden ground, f. 780
"Skirrid Fawr" (The Holy Mountain), 436 a. 3 r. 34 p., f. (including Sporting Rights). 4,000
By J. GRIFFIN & SON (at Ealing).
Ealing.—Green-av., f.g. rents 60*l.*, reversion in 96½ yrs. 1,367
By LANGRIDGE & FREEMAN (at Ashford).
Woodchurch, Kent.—"Hendon-pl. Farm" and "Belhurst," 165 a. 3 r. 26 p., f., y.r 140*l.* 3,350
Mill Lands, 8 a. 3 r. 22 p., f., y.r. 15*l.* 375
By J. C. PLATT (at Hammersmith).
Barnes.—15, Lilian-rd., f., w.r. 35*l.* 2s. 360
Shepherd's Bush.—98, Becklow-rd., f., w.r. 26*l.* 330
Kensington.—155, Blythe-rd., u.t. 71½ yrs., g.r. 9*l.* 10s., e.r. 50*l.* 375
Ealing.—2, Coningsby-rd. (s.), u.t. 52½ yrs., g.r. 5*l.*, w.r. 26*l.* 230
1 and 2, Coningsby-cottages, u.t. 52½ yrs., g.r. 6*l.*, w.r. 36*l.* 8s. 190
June 21.—By BRODIE, TIMBS, & CO.
Paddington.—43 and 45, Hampden-st., u.t. 40 yrs., g.r. 10*l.*, y.r. 58*l.* 500
By G. ERNEST CLARKE.
Walthamstow.—57, Somers-rd., f., e.r. 32*l.* .. 415
By HAMPTON & SONS.
Kintbury, Berks.—"Willows" and 116 acres, f., p. 5,000
By MATTHEWS, MATTHEWS, & GOODMAN.
Barnsbury.—59 and 61, St. Clement's-st., f., y.r. 58*l.* 705
25, Cornelia-st. (s.), f., y.r. 36*l.* 430
By PERKINS & CÆSAR.
Wandsworth.—Wandsworth-rd., "The Crown" b-h., and house adjoining, u.t. 52 yrs., g.r. 15*l.* for 5 yrs., and 10*l.* 10s. thereafter, y.r. 132*l.* 1,800
South Lambeth.—Wilcox-rd., f.g. rents 14*l.* 15s., revision in 37½ yrs. 525
Rosetta-st., f.g. rents 39*l.* 10s., reversion in 37½ yrs. 1,130
By SEDGWICK, SON, & WEALL.
Harefield, Middx.—"The Fishery Hotel," also 1 to 4, Fishery-cottages, area 6 a. 0 r. 24 p., f., y.r. 112*l.* 14s. (with Fishery in Backwater) 4,000
By A. DOWELL (at Edinburgh).
Kilmany, Fife.—The estate of Kinnear, 510 acres 15,000
By C. P. WHITELEY.
Chislehurst, Kent.—Mead-rd., "Mead Cottage," f., y.r. 45*l.* 970
Mead-rd. (rear of), three freehold building plots 330

By MADDISON, MILES, & MADDISON (at Yarmouth).
Potter Heigham, Norfolk.—"The Hall Farm," 42 acres, f. £1,625
"Worne Eleven Acres," 12 a. 0 r. 6 p., f... 340
Tithe Rent Charges of 364*l.* 9s. per annum . 3,000
June 22.—By BARNES & FROOME.
Ealing.—1, 3, 13, and 15, Milford-road, u.t. 95½ yrs., g.r. 22*l.*, w.r. 146*l.* 18s. 1,060
By J. BARTON & CO.
Old Ford.—2, Kenilworth-rd., f., w.r. 40*l.* 6s. 455
New Cross.—86, Drakefield-rd., u.t. 59 yrs., g.r. 6*l.* 6s., e.r. 40*l.* 415
By H. J. BLISS & SONS.
Bethnal Green.—198, 200, 204, and 206, Green-st. (s.), f., y.r. 132*l.* 10s. 1,305
55 and 57, Moss-st., f., w.r. 52*l.* 450
Hackney.—19A to 31A (odd), College-av., u.t. 78 yrs., g.r. 45*l.* 10s., y.r. 234*l.* 2,105
Leyton.—84 and 86, Goldsmith's-rd., f., w.r. 41*l.* 12s. 325
Greenwich.—38, Ashburnham-rd., u.t. 42 yrs., g.r. 5*l.* 16s. 8d., w.r. 42*l.* 18s. 198
By BRIDGMAN & SON.
Cheshunt, Herts.—Turner's Hill, two freehold shops, y.r. 130*l.* 2,350
By CHESTERTON & SONS.
Horselydown.—"Pickle Herring Lower Wharf," area 2,780 ft., f., p. 7,500
Kensington.—7, Sunningdale-gdns., u.t. 56 yrs., g.r. 4*l.*, e.r. 80*l.* 300
By J. G. DEAN & CO.
Balham.—101, St. James'-rd., f., y.r. 40*l.* 450
By C. C. & T. MOORE.
Leytonstone.—608, High-rd., f., e.r. 36*l.* 450
Forest Gate.—1, 3, 5, 7, 14, and 16, Ratcliff-rd., u.t. 74½ yrs., g.r. 9*l.*, w.r. 149*l.* 10s... 1,280
Canning Town.—5 to 21 (odd), George-st., f., w.r. 156*l.* 1,125
Poplar.—135 to 143 (odd), Kerbey-st. and 60, Flint-st., f., w.r. 120*l.* 18s. 1,020
24, 26, and 28, Burcham-st., f., w.r. 70*l.* 4s. 930
18, 20, and 22, Burcham-st., u.t. 55 yrs., g.r. 9*l.* 9s., w.r. 70*l.* 4s. 610
58, 60, and 62, Ida-st.; 38, 40, 42, and 44, Burcham-st., u.t. 34 yrs., g.r. 13*l.*, w.r. 154*l.* 14s. 900
2, Lion-st. (s.), f., w.r. 26*l.* 255
2, Willis-st. (shop, factory, etc.), f., y.r. 72*l.* 960
21, Mary-pl., f., y.r. 10*l.*; also l.g.r. 3*l.*, u.t. 37½ yrs., g.r. nil 700
By NEWBON, EDWARDS, & CO.
Caledonian-road.—16, 17, and 18, Sutterton-st., u.t. 42 yrs., g.r. 18*l.*, y.r. 108*l.* 600
Holloway.—11, St. John's-pk., u.t. 46 yrs., g.r. 8*l.* 8s., e.r. 60*l.* 550
Kentish Town.—53, Woodsome-rd., u.t. 57 yrs., g.r. 7*l.*, e.r. 45*l.* 460
De Beauvoir Town.—47, Culford-rd., u.t. 13½ yrs., g.r. 4*l.*, y.r. 34*l.* 205
Hoxton.—67, Grange-st., u.t. 31 yrs., g.r. 5*l.* 5s., y.r. 36*l.* 245
Dalston.—133, Queen's-rd., u.t. 14 yrs., g.r. 5*l.*, y.r. 33*l.* 125
36, Lenthall-rd., u.t. 14 yrs., g.r. 4*l.* 8s., y.r. 30*l.* 135
Tottenham.—39, Stonebridge-rd., u.t. 73 yrs., g.r. 5*l.* 5s., w.r. 29*l.* 18s. 165
44, Black Boy-la., u.t. 73 yrs., g.r. 5*l.* 5s., w.r. 27*l.* 6s. 165
Shepherd's Bush.—91, Shepherd's Bush-rd., u.t. 79 yrs., g.r. 10*l.* 10s., e.r. 50*l.* 590
By NOKES & NOKES.
King's Cross.—24, 25, and 26, Tiber-st. and 37A, Carlsbad-st. (s.), u.t. 36¾ yrs., g.r. 12*l.*, y.r. 113*l.* 12s. 730
Caledonian-road.—13 and 15, Gifford-st., u.t. 39½ yrs., g.r. 12*l.*, w.r. 106*l.* 12s. 380
By OAKLEY FISHER & CO.
Bloomsbury.—24, Torrington-sq., u.t. 19 yrs., g.r. 21*l.*, y.r. 100*l.* 655
By STIMSON & SONS.
Clapham Common.—13 and 25, The Chase, u.t. 79½ yrs., g.r. 30*l.*, y.r. 145*l.* 1,500
Clapham.—26, St. Luke's-rd., u.t. 78 yrs., g.r. 10*l.*, y.r. 45*l.* 360
Camberwell.—67, Langton-rd., u.t. 55 yrs., g.r. 4*l.* 10s., w.r. 41*l.* 12s. 250
Peckham.—41 and 42, Garsdale-rd., u.t. 57½ yrs., g.r. 8*l.*, w.r. 62*l.* 8s. 330
69, Surrey-rd., f., w.r. 43*l.* 11s. 460
Greenwich.—2 to 12 (even), Azof-st., u.t. 90½ yrs., g.r. 24*l.*, w.r. 171*l.* 12s. 950
Surbiton.—2, St. Philip's-rd., u.t. 62 yrs., g.r. 12*l.*, y.r. 55*l.* 410
June 23.—By WILLIAM HOLLIS.
King's Cross.—6, Railway-st., u.t. 40 yrs., g.r. 5*l.*, y.r. 30*l.* 240
Hendon.—19, 20, 21, and 22, Eaton-rd., f., w.r. 104*l.* 1,010
By JONES, LANG, & CO.
South Kensington.—35, Thurloe-sq., u.t. 22 yrs., g.r. 16*l.*, y.r. 180*l.* 1,660
Brompton.—Brompton-sq., f.g. rents 30*l.*, reversion in 10 yrs. 3,875
Sydenham.—9 and 15, Fransfield-gr., u.t. 55½ yrs., g.r. 9*l.*, y.r. 52*l.* 405
By NORTON, TRIST, & GILBERT.
City.—Fenchurch-st., f.g.r. 300*l.*, reversion in 59½ yrs. 10,000
Fenchurch-st., f.g.r. 175*l.*, reversion in 79½ yrs. 5,250
City.—Fore-st., lease of building site, area 1,100 ft., let at per annum 310
By RIDER & SONS.
Notting Hill.—17, Blenheim-cres., u.t. 57½ yrs., g.r. 12*l.*, y.r. 107*l.* 14s. 500
3, 9, 10, and 11, Archer-mews, u.t. 38 yrs., g.r. 20*l.*, w.r. 84*l.* 10s. 155
Bramley-rd., f.g. rents 63*l.*, reversion in 60 and 62 yrs. 1,760
Latimer-rd., f.g. rents, 12*l.*, reversion in 60 yrs. 300
29A, 31 to 39 (odd), Bramley-rd. (s.), f., y.r. 255*l.* 3,350
1, 2, and 3, Evesham-st., f., w.r. 85*l.* 16s... 800
1 to 4, Evesham-mews, f., w.r. 96*l.* 4s. 625

By WRIFORD, DIXON, & WINDER.
Enfield.—Windmill-hill, "The Old Wheatsheaf," b.h.; also three shops, two cottages, builder's yard, workshops, stabling, etc., adjoining, area 1 acre, f., y.r. 138*l.* ... £3,825
Notting Hill.—76, Kensington-pk.-rd. (s.), f., y.r. 90*l.* 1,630
Camberwell.—1, Palmerston-st., u.t. 45½ yrs., g.r. nil, y.r. 40*l.* 450
By S. WALKER & SON.
Twickenham.—Queen's-rd., "Holly House," f., p. 3,575

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; l.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

SATURDAY, JULY 1.
Edinburgh Architectural Association. — Visit to Inchcolm.

MONDAY, JULY 3.
Royal Institute of British Architects (*Special General Meeting requisitioned by Fellows and Associates*).—A special general meeting—summoned in accordance with By-law 60, on the requisition of Messrs. S. B. Russell, Alfred H. Hart, T. Edwin Cooper, Herbert Wigglesworth, Alfred W. S. Cross, Wm. Flockhart, C. E. Mallows, R. Stephen Ayling, Thomas A. Pole, H. V. Lanchester, J. E. Newberry, Herbert W. Wills, and John Anderson—to discuss the following amendments, proposed by the requisitionists, to the regulations for architectural competitions passed at the meeting of June 5, viz., Clause 14 to read as follows:—"In all works costing an estimated sum of 25,000*l.* and upwards three assessors to be appointed unless there are insurmountable objections. As stated above, the President of the Royal Institute of British Architects is always ready to advise on this or other points." [The clause stands as follows at present:—"In the case of works of considerable magnitude it is desirable that three assessors should be appointed. As stated above, the President of the Institute is always ready to advise on this or other points."] The clause as to scale of charges in the original draft to be reinstated in the following form:—"The usual R.I.B.A. scale of charges for assessing competitions is at the minimum rate of thirty guineas plus ½ per cent. upon the estimated cost of the proposed building." 8 p.m.

WEDNESDAY, JULY 5.
Royal Archæological Institute.—"A Short Note on Chepstow Parish Church," by Mr. Charles Lynam, F.S.A. 4 p.m.
Institute of Sanitary Engineers, Ltd.—Election Committee. 3.30 p.m. Organising Committee. 5 p.m.

FRIDAY, JULY 7.
Royal Institute of British Architects.—The President's "At Home," Exhibition of Decorative Art. 8.30 to 11.

SATURDAY, JULY 8.
Northern Architectural Association.—Students' Sketching Club Excursion.
Edinburgh Architectural Association.—Annual Excursion to (1) Dunkeld Cathedral, (2) Murthly Castle, and (3) Stobhall.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

	£	s.	d.			
BRICKS, &c.						
Hard Stocks.	1	10	0	per 1000	alongside, in river.	
Rough Stocks and Grizzles	1	6	6	„	„	„
Facing Stocks ...	2	2	0	„	„	„
Shippers	2	2	0	„	„	„
Flettons	1	7	0	„	at railway depôt.	
Red Wire Cuts ...	1	14	0	„	„	„
Best Fareham Red	3	12	0	„	„	„
Best Red Pressed Ruabon Facing	5	0	0	„	„	„
Best Blue Pressed Staffordshire ...	4	2	6	„	„	„
Do. Bullnose	4	7	6	„	„	„
Best Stourbridge Fire Bricks.....	4	0	0	„	„	„
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	12	0	0	„	„	„
Headers	11	0	0	„	„	„
Quoins, Bullnose, and Flats.....	16	0	0	„	„	„
Double Stretchers	19	0	0	„	„	„
Double Headers...	16	0	0	„	„	„
One Side and two Ends	19	0	0	„	„	„
Two Sides and one End	20	0	0	„	„	„
Splays, Chamferred, Squints	20	0	0	„	„	„
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	„	„	„
Quoins, Bullnose, and Flats.....	14	0	0	„	„	„
Double Stretchers	15	0	0	„	„	„
Double Headers...	14	0	0	„	„	„
One Side and two Ends	15	0	0	„	„	„
Two Sides and one End	15	0	0	„	„	„
Splays, Chamferred, Squints	14	0	0	„	„	„
Second Quality White and Dipped Salt Glazed	2	0	0	„	less than best.	

BRICKS, &c. (*continued*).

Thames and Pit Sand.....	7	0	per yard,	delivered.
Thames Ballast.....	5	9	„	„
Best Portland Cement	27	0	per ton,	„
Best Ground Blue Lias Lime	20	0	„	„

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.		
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.	
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	„	„
PORTLAND STONE (20 ft. average)—				
Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2	1	„	„
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2	2½	„	„

	s.	d.		
Ancaster in blocks.....	1	11	per ft. cube,	deld. rly. depôt.
Beer „	1	6	„	„
Greenshill „	1	10	„	„
Darley Dale in blocks...	2	4	„	„
Red Corsehill „	2	5	„	„
CloseburnRedFreestone	2	0	„	„
Red Mansfield „	2	4	„	„
YORK STONE—*Robin Hood Quality.*				
Scappled random blocks	2	10	„	„
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super.	„
6 in. rubbed two sides ditto, ditto	2	6	„	„
3 in. sawn two sides slabs (random sizes)	0	11½	„	„
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	„	„
1½ in. to 2 in. ditto, ditto	0	6	„	„
HARD YORK—				
Scappled random blocks	3	0	per ft. cube,	„
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2	8	per ft. super.	„
6 in. rubbed two sides ditto	3	0	„	„
3 in. sawn two sides (slabs random sizes)	1	2	„	„
2 in. self-faced random flags	0	5	„	„

	s.	d.		
Hopton Wood (Hard Bed) in blocks	2	0	per ft. cube.	deld. rly. depôt.
„ „ „ 6 in. sawn both sides landings	2	7	per ft. super.	deld. rly. depôt.
„ „ „ 3 in. sawn both sides random slabs.....	1	0	„	„
„ „ „ 2 in. do.	0	8½	„	„

SLATES.

in.	in.	£	s.	d.		
20 × 10 best blue Bangor		13	2	6	per 1000 of 1200 at	r. d.
20 × 12 „	„	13	17	6	„	„
20 × 10 first quality	„	13	0	0	„	„
20 × 12 „	„	13	15	0	„	„
16 × 8 „	„	7	5	0	„	„
20 × 10 best blue Portmadoc		12	12	6	„	„
16 × 8 „	„	6	12	6	„	„
20 × 10 best Eureka unfading green .		15	17	6	„	„
20 × 12 „	„	18	7	6	„	„
18 × 10 „	„	13	5	0	„	„
16 × 8 „	„	10	5	0	„	„
20 × 10 permanent green		11	12	6	„	„
18 × 10 „	„	9	12	6	„	„
16 × 8 „	„	6	12	6	„	„

TILES.

	s.	d.		
Best plain red roofing tiles .	42	0	per 1000 at	rly. depôt.
Hip and Valley tiles ...	3	7	per doz.	„ „
Best Brosely tiles.....	50	0	per 1000	„ „
Do. Ornamental tiles	52	6	„	„ „
Hip and Valley tiles ...	4	0	per doz.	„ „
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000	„ „
Do. Ornamental do	60	0	„	„ „
Hip tiles	4	0	per doz.	„ „
Valley tiles	3	0	„	„ „
Best Red or Mottled Staffordshire do. (Peakes).....	51	9	per 1000	„ „
Do. Ornamental do.....	54	6	„	„ „
Hip tiles	4	1	per doz.	„ „
Valley tiles	3	8	„	„ „
Best "Rosemary" brand plain tiles.....	48	0	per 1000	„ „
Best Ornamental tiles	50	0	„	„ „
Hip tiles	4	0	per doz.	„ „
Valley tiles	3	8	„	„ „
Best "Hartshill" brand plain tiles, sand faced.	50	0	per 1000	„ „
Do. pressed.....	47	6	„	„ „
Do. Ornamental do	50	0	„	„ „
Hip tiles	4	0	per doz.	„ „
Valley tiles	3	6	„	„ „

WOOD.

BUILDING WOOD.	At per standard.					
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	£	13	s. 10	d. 0	£	15 0 0
Deals: best 3 by 9.....		13	0	0		14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.		11	0	0		12 0 0
Battens: best 2½ by 6 and 3 by 6..		0	10	0	less than 7 in. and 8 in.	
Deals: seconds		1	0	0	less thn best.	
Battens: seconds		0	10	0	„ „	„
2 in. by 4 in. and 2 in. by 6 in....		9	0	0		10 0 0
2 in. by 4½ in. and 2 in. by 5 in....		8	10	0		9 10 0
Foreign Sawn Boards—						
1 in. and 1¼ in. by 7 in.		0	10	0	more than battens.	
¾ in.		1	0	0	„	

WOOD (*continued*).

BUILDING WOOD (*continued*)	At per load of 50 ft.					
Fir timber: best middling Danzig or Memel (average specification)	£	4	s. 10	d. 0	£	5 0 0
Seconds		4	0	0		4 10 0
Small timber (8 in. to 10 in.) ...		3	12	6		3 15 0
Small timber (6 in. to 8 n.).....		3	0	0		3 10 0
Swedish balks		2	10	0		3 0 0
Pitch-pine timber (30 ft. average)		3	5	0		3 15 0
JOINERS' WOOD.	At per standard.					
White Sea: first yellow deals, 3 in. by 11 in		24	0	0		25 0 0
3 in. by 9 in.		22	0	0		23 0 0
Battens, 2½ in. and 3 in. by 7 in.		16	10	0		18 0 0
Second yellow deals, 3 in by 11 in.....		18	10	0		20 0 0
„ „ 3 in. by 9 in.		17	10	0		19 0 0
Battens, 2½ in. and 3 in. by 7 in.		13	10	0		14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.		13	10	0		15 0 0
Battens, 2½ in. and 3 in. by 7 in.		11	0	0		12 0 0
Petersburg: first yellow deals, 3 in. by 11 in.		21	0	0		22 10 0
Do. 3 in. by 9 in.....		18	0	0		19 10 0
Battens.....		13	10	0		15 0 0
Second yellow deals, 3 in. by 11 in.		16	0	0		17 0 0
Do. 3 in. by 9 in.....		14	10	0		16 0 0
Battens.....		11	0	0		12 10 0
Third yellow deals, 3 in. by 11 in.		13	0	0		14 0 0
Do. 3 in. by 9 in.....		12	10	0		14 0 0
Battens.....		10	0	0		11 0 0
White Sea and Petersburg :—						
First white deals, 3 in. by 11 in.		14	10	0		15 10 0
„ „ 3 in. by 9 in.		13	10	0		14 10 0
Battens		11	0	0		12 0 0
Second white deals, 3 in. by 11 in.		13	10	0		14 10 0
„ „ 3 in. by 9 in.		12	10	0		13 10
„ „ battens		10	0	0		11 0 0
Pitch-pine: deals.....		16	10	0		20 0 0
Under 2 in. thick extra		0	10	0		1 0 0
Yellow Pine—First, regular sizes		44	0	0	upwards.	
Oddments		32	0	0	„	
Seconds, regular sizes.....		33	0	0	„	
Yellow Pine oddments		28	0	0	„	
Kauri Pine—Planks, per ft. cube .		0	3	6		0 5 0
Danzig and Stettin Oak Logs— Large, per ft. cube		0	3	0		0 3 6
Small „ „		0	2	6		0 2 9
Wainscot Oak Logs, per ft. cube.		0	5	0		0 5 6
Dry Wainscot Oak, per ft. sup. as inch		0	0	8		0 0 9
¾ in. do. do.		0	0	7		—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch ...		0	0	9		0 1 0
Selected, Figury, per ft. sup. as inch		0	1	6		0 2 6
Dry Walnut, American, per ft. sup. as inch		0	0	10		0 1 0
Teak, per load		17	0	0		22 0 0
American Whitewood Planks, per ft. cube.....		0	4	0		0 5 0
Prepared Flooring, etc.—	Per square.					
1 in. by 7 in. yellow, planed and shot		0	13	6		0 17 6
1 in. by 7 in. yellow, planed and matched		0	14	0		0 18 0
1¼ in. by 7 in. yellow, planed and matched		0	16	0		1 0 0
1 in. by 7 in. white, planed and shot		0	12	0		0 14 6
1 in. by 7 in. white, planed and matched		0	12	6		0 15 0
1¼ in. by 7 in. white, planed and matched		0	15	0		0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.		0	11	0		0 13 6
1 in. by 7 in. do. do.		0	14	0		0 18 0
¾ in. by 7 in. white do. do.		0	10	0		0 11 6
1 in. by 7 in. do. do. do.		0	12	9		0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton.					
Rolled Steel Joists, ordinary sections	£	6	s. 0	d. 0	£	6 15 0
Compound Girders, ordinary sections		7	10	0		8 10 0
Steel Compound Stancheons ...		9	2	6		10 12 6
Angles, Tees and Channels, ordinary sections		7	10	0		8 10 0
Flitch Plates		7	15	0		8 5 0
Cast Iron Columns and Stanchions including ordinary patterns		6	12	6		7 15 0

METALS.

IRON—	Per ton, in London.					
Common Bars	£	7	s. 0	d. 0	£	7 10 0
Staffordshire Crown Bars, good merchant quality.....		7	10	0		8 0 0
Staffordshire "Marked Bars"		9	10	0		—
Mild Steel Bars.....		8	5	0		8 15 0
Hoop Iron, basis price		8	15	0		9 0 0
„ Galvanized		16	10	0		—
„ „ (*And upwards, according to size and gauge.)						
Sheet Iron, Black—						
Ordinary sizes to 20 g.		9	0	0		—
„ „ 24 g.		10	0	0		—
„ „ 26 g.		11	15	0		—
Sheet Iron, Galvanised, flat, ordinary quality—						
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.....		12	10	0		—
Ordinary sizes to 22 g. and 24 g.		13	0	0		—
„ 26 g.		14	0	0		—
Sheet Iron, Galvanised, flat, best quality—						
Ordinary sizes to 20 g.		15	10	0		—
„ „ 22 g. and 24 g.		16	0	0		—
„ „ 26 g.		17	10	0		—
Galvanised Corrugated Sheets—						
Ordinary sizes 6 ft. to 8 ft. 20 g.		12	10	0		—
„ „ 22 g. and 24 g.		13	0	0		—
„ „ 26 g.		13	15	0		—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker		11	0	0		—
Best Soft Steel Sheets, 22 g. & 24 g.		12	0	0		—
„ „ „ 26 g.....		13	10	0		—
Cut nails, 3 in. to 6 in.....		9	0	0		9 10 0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Per ton, in London.					
LEAD—Sheet, English, 3 lb. and up	£	15	s. 15	d. 0	£	—
Pipe in coils		16	5	0		—
Soil pipe		18	15	0		—
Compo pipe.....		18	15	0		—
ZINC—Sheet—						
Vieille Montagne .....ton		30	5	0		—
Silesian.....		30	0	0		—
COPPER—						
Strong Sheet.....per lb.		0	0	10		—
Thin „ ..... „		0	0	11		—
Copper nails ..... „		0	0	10		—
BRASS—						
Strong Sheet..... „		0	0	9½		—
Thin „ ..... „		0	0	10		—
TIN—English Ingots ..... „		0	1	4½		—
SOLDER—Plumbers' ..... „		0	0	6½		—
Tinmen's..... „		0	0	8		—
Blowpipe..... „		0	0	9		—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d.	per ft.	delivered.
„ fourths.....	2d.	„	„
21 oz. thirds	3¾d.	„	„
„ fourths.....	3d.	„	„
26 oz. thirds	4¼d.	„	„
„ fourths.....	3¾d.	„	„
32 oz. thirds	5¼d.	„	„
„ fourths.....	5d.	„	„
Fluted Sheet, 15 oz.....	3½d.	„	„
„ 21 oz.....	4¼d.	„	„
⅛ Hartley's Rolled Plate	2d.	„	„
⅛ „ „ „	2½d.	„	„
¼ „ „ „	2½d.	„	„

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	1	6
„ „ „ in barrels	„	0	1	10
„ „ „ in drums.....	„	0	2	0
Boiled „ „ in pipes	„	0	1	11
„ „ „ in barrels	„	0	2	0
„ „ „ in drums.....	„	0	2	2
Turpentine, in barrels	„	0	4	4
„ in drums.....	„	0	4	6
Genuine Ground English White Lead	per ton	19	15	0
Red Lead, Dry	„	19	5	0
Best Linseed Oil Putty	per cwt.	0	6	6
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.

	Per gallon.		
	£	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak.....	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	0
Fine Elastic Carriage.....	0	12	6
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan.....	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	6
Berlin Black	0	16	0
Knotting	0	10	0
French and Brush Polish	0	10	0

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BOURNEMOUTH.—For making-up Withermoor-road and Osborne-road, for the Corporation. Mr. F. W. Lacey, Borough Engineer, Bournemouth:—

F. Hoare & Sons	£942 0 10	Grounds & Newton....	£794 7 10
J. Corbin	820 16 3		

TENDERS.—*Continued on page* 27.

CONTRACTS AND PUBLIC APPOINTMENTS.

(For some Contracts, etc., still open, but not included in this List, see previous issues)

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tender to be Delivered
*Roadmaking and Paving Works	Hendon U.D.C.	Council's Engineer, Council Offices, Hendon, N.W.	July 3
Four Workmen's Dwellings, Bristol	New Streets Committee	T. H. Yabbicom, City Engineer, 63, Queen-square, Bristol	July 4
Paint., etc., Cottage Home Inst., Olive Mt, Wavertree	Liverpool Select Vestry	H. J. Hagger, Parish Offices, Brownlow Hill, Liverpool	do.
Reseating Wesleyan Chapel, Danby Wiske		Lazenby Hall, Danby Wiske, near Northallerton	do.
Cast-Iron Pipes, etc., Gas Department	Glasgow Corporation	A. Wilson, Gas Engineer, 45, John-street, Glasgow	do.
*Erection of Cottage in Council's Store Yard	Willesden District Council	O. Claude Robson, Dyne-road, Kilburn, N.W.	do.
*Roadmaking and Paving Works	do.	do.	do
Twenty Garden Seats	Warrington Health Committee	T. Longdin, Borough Engineer, Warrington	July 5
Street Improvement	Ashton-in-Makerfield U.D.C.	T. Burgess, Surveyor, Council Offices, Ashton-in-Makerfield	do.
Cemetery-road Sewer	Shrewsbury Sanitary Committee	W. C. Eddowes, Borough Surveyor, The Square, Shrewsbury	do.
Removing Bridge Plates, Springfield-lane	Salford Corporation	Borough Engineer's Office, Salford	do.
3,500 sq. yds. of Hard Blue Floor Tiles	do.	do.	do.
Painting Four Bridges over the Irwell, etc.	do.	do.	do.
Cast-Iron Pipes and Valves for Sewage Works	do.	do.	do.
New Sewer, Claremont-lane, Esher	Esher U.D.C.	Engineer & Sur., Council Offices, Brabant Villa, Thames Ditton	do.
Pig Iron	East Indian Railway Co.	C. W. Young, Secretary, Nicholas-lane, London, E.C.	do.
Wheels for Carriages and Waggons	Assam-Bengal Railway Co.	Offices of Company, 53, Bishopsgate-street Within, E.C.	do.
Limestone, Granite, and Chippings	Nantyglo and Blaina U.D.C.	W. J. Davies, Surveyor, Blaina	do.
Granite Sett Paving, Holme-lane end, etc.	Gomersal U.D.C.	A. Roberts, Surveyor, Gomersal, near Leeds	do.
Treating Decayed Stonework of Police Offices	Glasgow Corporation	Office of Public Works, 64, Cochrane-street, Glasgow	July 6
Scavenging	Blaydon U.D.C.	R. Biggins, Council Offices, Blaydon	do.
Paving, etc., Murray-street and Ann-street	do.	G. Symon, Surveyor, Council Offices, Blaydon-on-Tyne	do.
Paving and Flagging Streets	Leeds Highways Department	City Engineer's Office, Municipal-buildings, Leeds	do.
Flagging, etc., & Making Tar-Macadam Rd., Sefton-av.	do.	do.	do.
Steading at Lettoch	Mr. J. Eadie	J. S. Thomson, Factor, Keith, N.B.	do
Alterations at Workhouse	King's Lynn Guardians	Jarvis & Sons, Architects, Paradise-parade, Lynn	do
*Alters. to Lower-rd. Casual Wards, Rotherhithe, S.E.	Bermondsey Guardians	Clerk to the Guardians, Guardians' Offices, Tooley street, S.E.	do
Artificial Curling Rinks	Swansea Town Council	Wardlow & Morrison, Solicitors, Bridge of Allan	July 7
Repairs and Alterations to Swansea Market	Celbridge Guardians	G. Moxham, Architect, 39, Castle-street, Swansea	do.
Meal Store	Cleckheaton U.D.C.	F. Shortt, Celbridge Union Workhouse, Ireland	do.
Annual Contracts	Renfrew District Lunacy Board	J. H. Linfield, Clerk, Town Hall, Cleckheaton	July 8
Asylum at Dykebar Paisley	Whickham U.D.C.	T. G. Abercrombie, Architect, County-place, Paisley	do.
Sewer, Long Rigg, Sivalwell	Newport (Mon.) Electricity Com.	J. B. Renton, Surveyer, Council Offices, Whickham	do.
Cast-Iron Exhaust and Water Piping, etc.	do.	H. C. Bishop, Borough Electrical Engineer, Town Hall, Newport	do.
Steel Water-Cooling Tower	do.	do.	do.
Electrically-Driven Surface Condenser	Birr (Ireland) Guardians	Moynan & Gill, Architects, Nenagh, Ireland	do.
Medical Officer's Residence, etc., Ferbane	Rotherham Tramways Department	S. M'Gladery, Lime Works, Shankill-road, Belfast	do.
14 Houses, Riverview-st., Stranmillis-rd., Belfast.	Danylan Building Club	Tramways Manager, Tram Depot, Rotherham	do.
Tramway Stores	Cardiff Guardians	Evans, Williams, & Evans, Architects, Pontypridd	do.
Fifty Houses at Pwllgwann, Pontypridd	Rhondda Baptist Chapel Trustees	A. G. Harris, Union Offices, Queen's-chambers, Cardiff	do.
Two Wrought-iron Water Tanks, etc., Cardiff Workho.	Penge U.D.C.	Evans, Williams, & Evans, Architects, Pontypridd	do.
Enlarging Vestry at Hopkinstown, near Pontypridd		Surveyor, Town Hall, Anerley, S.E.	do.
Soft Wood Paving & Concrete Founds., Croydon-rd.	Northamptonshire Education Com.	R. C. Lobhan, Carr-Bridge, N.B.	do
Villa, Carr-Bridge	Brumby and Frodringham U.D.C.	Law & Harris, Architects, 1, Sheep-street, Northampton	July 10
Council Schools, Byfield	Radyr Golf Club	R. Atkinson, C.E., Brigg	do.
Two Sets of Pumping Engines and Boilers	Duke of Roxburgh	W. H. Dashwood Caple, Architect, Church-st.-chambers, Cardiff	do
Alterations, etc., Golf Club House, Radyr	Standing Joint Com., Co. of Brecon	F. Stephenson, Hon. Sec.	do
Painting, etc., Primitive Methodist Chapel, Gt. Cliffe	Sculwater Guardians	W. R. Copland, C.E., 146, West Regent-street, Glasgow	do
Water Supply, Floors, Castle and Offices	Teddington U.D.C.	C. W. Best, County Surveyor, County Hall, Brecon	do.
Alterations, etc., Brynmawr Police-Station	Bootle Corporation	T. B. Atkinson, Architect, 11, Trinity House-lane, Hull	do.
Painting 2 Wards, Workh. Infr., Beverley-rd., Hull	Leamington Spa Corporation	M. Hainsworth, Surveyor, Elmfield House, Teddington	do.
Private Street Works	Sculwater Guardians	R. J. Wolfenden Borough Engineer, Town Hall Bootle	do.
Underground Convenience and Two Urinals	Rev. G. Heaton, M.A.	Borough Engineer's Office, Town Hall, Leamington	do.
4,500 tons of Road Stone	Rev. H. G. Corner	T. B. Atkinson, Architect, 11, Trinity House-lane, Hull	July 11
Window, House at Cottage Homes, Hessle	Wembley U.D.C.	Veall & Sant, Architects, Cardiff	do.
Infants Department, etc., Bute-ter., Schools, Cardiff	Metropolitan Asylums Board	Nicholson & Hartree, Architects, Hereford	July 12
Chancel, Org. Cham. & Vestry, H. Trin. Ch., Hereford.	Fulham Borough Council	W. H. Dashwood Caple, Architect, Church-st.-chambers, Cardiff	do
Alters., etc., to Rectory Hse., Llangattock-juxta-Usk	Leeds Corporation	C. R. W. Chapman, Surveyor, Public Offices, Wembley	do
Making-up Turton and Elspeth roads	South Mimms R.D.C.	Office of the Board, Embankment, E.C.	do.
*Cleaning and Painting Works Tooting, S.W.	Rotherham R.D.C.	Borough Surveyor, Town Hall, Fulham, S.W.	to
*Making-up Carriageway of Chipstead-street		C. G. Henzell, Waterwork's Engineer, Municipal-buildings, Leeds	July 13
Cast-Iron Pipes and Castings, Hunslet Goods Station	Hackney Borough Council	W. H. Mansbridge, 40, High-street, Barnet	do.
*Road Improvements, Potter's Bar	Edinburgh and Dist. Water Trustees	R. Bradbury, District Surveyor, 29B, High-street, Rotherham	to
Gritstone Culvert over Eel's Mire Dike, Laughton	The Harbour Board	S. Hill, Architect, Green-lane, Redruth	do
Lecture Hall, etc., at U.M.F.C., Redruth		Norman Scorgie, Borough Engineer, Town Hall, Hackney, N.E.	do.
Hard Wood Paving, Stamford-road, Kingsland	Metropolitan Borough of Lambeth	W. A. Tait, C.E., 72A George-street, Edinburgh	
2,000 yds. C.I. Pipes, etc., Cleaves to Deepsykehead	Surrey Education Committee	Offices of the Board, Town Quay, Southampton	do
Dredging Work, Town Quay, etc., Southampton	Lerwick Town Council	H. L. Butler, Salesian Schools, Surrey-lane, Battersea, S.W.	do.
*Erection of Church, East Hill, Wandsworth, S.W.	Isleworth Burial Board	Borough Engineer, 346, Kennington-road, S.E.	do
*Repairing, etc., 66, York-road, Lambeth, S.E.	Birmingham Corporation	Jarvis & Richards, 36, Victoria street, S.W.	July 14
*Alterations and Additions to Schools	Leicester Water Committee	G. Cruickshank, Burgh Surveyor, Lerwick	do
Water Pipes, etc.	do.	E. J. Partridge, F.S.I., 39, George-street, Richmond	July 15
Repairs (Stonework, Painting, etc.)	do.	A. Rowse, Surveyor, King's-court, Colmore-row, Birmingham	
Tramway Depot, Rosebery-street and Camden-street	Sheffield Education Committee	J. B. Everard, Engineer, 6, Millstone-lane, Leicester	July 17
Laying Mains—Derwent Main	South Shields Town Council	do.	do.
Pipes—Derwent Main	Paignton U.D.C.	do.	do.
Valves—Derwent Main	Great Northern Railway Co., Ireland	J. F. Moss, Secretary of Committee, Sheffield	do.
Painting, Distempering, etc., Council Schools	Hale U.D.C.	S. E. Burgess, Borough Engr. & Sur., Chapter-row, South Shields	do
Public Slaughter-houses, Station-rd., Claypath-lane	West Ham Education Committee	C. O. Baines, Engineer, Town Hall, Paignton	do.
Widen. Primley Hill (Totnes-rd.) & Batterways Bdge.	do.	W. H. Mills, Engineer-in-Chief, Amien's-st. Terminus, Dublin	do.
Two Cottages at Dromin Station	London C.C.	F. J. Lobley, Public Offices, Ashley-rd., Hale, Cheshire	do.
Sewerage and Drainage Works	Commissioners of H.M. Works, etc.	W. Jacques, 2, Fen-court, E.C.	do
*School Furniture, Electric Lighting, H.W. Heating	Hull Corporation	do.	do
*Terrazo Paving, Galvanised-Iron Portable Dustbins	West Ham Union	Superintending Architect's Dept., 15, Pall Mall East, S.W.	July 18
*New Entrances, etc., St. Geo.-the-M. Ch., Southwark	Essex Education Committee	H.M. Office of Works, Storey's-gate, S.W.	do.
*New Sorting Office, Ashford	Beckenham U.D.C.	Inspector of Nuisances, Hanover-square, Hull	July 19
Night Soil Collection	The Committee	J. W. Dunford, Architect, 100C, Queen Victoria-street, E.C.	do.
*Alterations and Additions at Workhouse, Leytonstone	Leeds Corporation	J. H. Nicholas, Secretary, County Offices, Chelmsford	do.
*Iron Building at Leigh-on-Sea	Hawarden R.D.C.	J. A. Angell, Architect, Council Offices, Beckenham	do
*Extensions to Arthur-road Schools, Beckenham	Governors (see Advt. June 24, p. viii.)	J. Morris Williams, Architect, Blackmill	July 21
Additions, etc., Workmen's Hall, etc., Nantymoel	Hartley Univ. College, Southampton	City Engineer's Office, Municipal-buildings, Leeds	July 25
Cleaning, Paint., etc., Rooms, etc., in Art Gallery, etc.	Phillips & Sons, Ltd.	E. S. Taylor & A. C. Williams, 26, Newgate-street, Chester	July 31
Sewerage Works, Ewloe, Hawarden, Mancott, etc.	do.	W. G. Wilson, Architect, 5, Bloomsbury-mansions, Hart-st., W.C.	Aug. 1
New Royal Latin School, Buckingham		W. B. Woodhead & Sons, Surveyors, 18, Exchange, Bradford	No date.
456 lin. yds. Pipe Sewer, Huddersfield-rd., Brighouse	Faversham Education Committee	The Registrar	do.
Experimental Plant		Rev. J. G. Holborn, Carbrook-vicarage, Sheffield	do.
Rubble Fence Walls		Swalwell & Havard, Archs., Steam Packet-chbrs., Dock-st., Newport	do.
Rebuilding George Hotel, etc., Market-st., Pontypool		do.	do.
Alterations, etc., to Walpole Hotel, Llanhilleth		A. Stevenson, 14, Cathcart-street, Ayr	do.
Additions and Alterations to Court-house, Ayr		J. Beck, Carthorpe, Bedale	do
Erection of a Schoolroom		W. L. Grant, Architect, Sittingbourne	do.
*Erection of Schools			

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Teacher of Carpentry and Joinery	Ealing Local Technical Inst. Com.	10s. an evening	July 8
*Teacher for Engineering Subjects	Woolwich Polytechnic	150*l.* per annum	July 14
*Teacher for Building Construction	do.	Not stated	do.

Those marked with an asterisk (*) are advertised in this number. *Competitions*, —. *Contracts*, lv. vi. viii. x. *Public Appointments*, xviii.

TENDERS.—*Continued from page 25.*

BRUMBY.—For water supply works, Brumby and Frodingham, for the Urban District Council. Mr. A. Atkinson, C.E., Brigg:—

Jenkin & Son	£3,199	8	1	J. H. Macdonald ..	£1,767	12	2
Waghorn Bros.	3,035	2	5	A. Streeter & Co.	1,697	8	10
T. Bell	2,592	9	0	P. & S. Kearsley	1,635	8	5
H. H. Barry	2,557	8	0	J. H. Harper	1,627	0	0
Bennie & Thompson	2,435	10	1	R. C. Crawford	1,551	7	3
A. H. Ball & Co.	2,302	5	0	J. Sangwin	1,471	17	11
H. E. Buckley	2,242	8	6	R. C. Brebner & Co., 4c, 8t. Andrew's-sq., Edinburgh† ..	1,397	0	0
Meredith Bros.	2,194	4	8	T. Jackson, jun.	1,391	7	6
J. H. Vickers	2,174	5	7	T. Parkin & Co.	1,386	0	0
Aves & Houfton	2,144	18	4	T. Kearsley, jun.....	1,283	2	0
J. W. Dean, Ltd.	1,916	5	9				
R. Holmes & Sons	1,859	0	4				
H. Spardlow	1,840	0	0				
H. Ashley ..	1,780	0	0				

CANTERBURY.—For renewing the slating of roof and pointing the walls of wards at Workhouse, for the Guardians. Mr. H. Doré, architect, 8, High-street, Canterbury:—

H. J. Smith & Son	£214	0	0	J. C. Elvy....	£182	10	4
W. J. Adcock	201	0	0	Amos & Foad	181	0	0
C. Mount	196	6	6	H. W. Bateman	181	0	0
F. W. Philpott	190	15	4	G. Browning, Canterbury*.	149	0	0
Gann & Co. ..	185	0	0				

CARLTON COLVILLE.—For alterations and additions, Carlton Colville, Suffolk, for the Rev L. W. H. Andrews. Mr. H. J. Green, architect, 31, Castlemeadow, Norwich:—

Chaston & Grimson	£885	19	0	C. R. Cole	£792	4	0
W. J. Searle ..	815	19	4	G. E. Hawes, Norwich† ..	701	18	0

CARSHALTON-ON-THE-HILL.—For installation of engineering plant in boiler house, etc., at the Southern Convalescent Hospital, for the Metropolitan Asylums Board. Mr. W. T. Latch, Engineer-in-Chief:—

W. J. Fraser & Co., Ltd.	£8,695	J. Simpson & Co.	£7,684
E. Danks & Co. (Oldbury), Ltd...	8,590	T. Potter & Sons, Ltd.	7,249
Moorwood, Sons, & Co., Ltd.	8,020	Wenham & Waters, Ltd.	7,203
Lea, Son, & Co. ..	7,785	Hill & Herbert, Ltd.	7,040
J. & F. May.....	7,698	Death & Ellwood, Joseph-street, Leicester*	6,492
Rosser & Russell, Ltd.	7,659		

CARSHALTON-ON-THE-HILL. — For engineering work (re-erection of machinery) in connexion with laundry, etc., installation at the Southern Convalescent Hospital, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

T. Cudlipp.....	£6,444	Moorwood, Sons, & Co., Ltd.	£3,515
Clements, Jeakes, & Co.	4,450	Wenham & Waters, Ltd.	3,398
J. & F. May.....	4,095	Hill & Herbert, Ltd.	3,370
Rosser & Russell, Ltd.	4,065	Death & Ellwood..	3,275
J. Simpson & Co., Ltd.	3,635	T. Potter & Sons, Ltd., 44, South Molton-street, Oxford-street, W.*	3,249
Lea, Son, & Co. ..	3,593		

CHESILTON.—For repair of the 12-in. iron pipe sewage outfall in the West Bay, for the Portland Urban District Council. Mr. R. S. Henshaw, Engineer and Surveyor, Council Offices, New-road, Portland:—

E. T. Agius & Co. (Southampton), Ltd.	£200	J. Vallance, Weymouth*	£97

CHESTER.—For laying out a building estate, for Messrs. Walkers, Parker, & Co. Mr. J. Little, engineer, Viaduct-chambers, Carlisle:—

S. Hutton	£2,910	13	2	J. W. Harris	£2,385	0	0
J. Hynes..	2 889	5	6	Bullen Bros.	2,361	10	0
J. Allan....	2,573	2	6½	Davis & Co.	2,315	7	10
Bennie & Thompson	2,467	13	6	J. Johnson	2,292	18	1
J. Owens..	2,462	4	9	Reid & Son	2,257	3	9
R. C. Brebner	2,458	0	0	Snape & Sons, Eccles*..	2 083	19	10
T. Lowe & Sons	2,396	18	4	B. Orley ..	2,058	19	10

CUMINESTOWN.—For additions to Central School, Cuminestown. Messrs. J. Duncan & Son, architects, Turriff:—

Mason: J. Dugind, Garmond, Turriff*.
Carpenter: W. H. Skene, Turriff* ....
Slaters: J. Gammack & Co., Turriff*..
Plasterer: R. Aloir, Inverurie* .....
Plumbers: C. Duthere & Sons. Turriff*
Painter: J. D. Watson, Turriff*..... } £930 1 6

DORCHESTER.—For re-erecting premises, 13, South-street, for Mr. E. E. Wernham. Mr. F. T. Maltby, architect and surveyor, Dorchester:—

Barrett, Son, & Davis	£649 10	R. Davis & Son..	£588 0
J. Selby	590 4	Watts Bros., Dorchester* ..	573 10

DOWLAIS. — For building a free library, for the Merthyr Tydfil Urban District Council. Mr. E. A. Johnson, architect, Abergavenny and Merthyr:—
W. Watts, Brynbeulog, Dowlais £2,900

DRUNGEWICK.—For pulling down bridge over old canal at Drungewick, near Loxwood, Sussex, and erecting steel girder bridge, for the Petworth Rural District Council:—

Wilkinson Bros.	£741	H. Lindfield & Son	£427
Edwards & Co.....	610	H. Spooner.....	397
A. E. Rigby	465	J. Boxall, Tillington, Petworth*	349
E. & J. H. Holden..	454		

DUNFERMLINE.—For extensions to dormitories and day-rooms at Combination Poor House. Mr. A. Muirhead, architect, 4, Abbey Park-place, Dunfermline:—
J. Stewart & Sons, Dunfermline £2,872 18 11

DURHAM.—For erecting two iron schools. Mr. W. Rushworth, architect, County Education Offices, Durham:—

	For Shotton School.	For South Church School.
The Wire Wove Roofing Co.	£360	£140
Artistic Construction Co. ..	341	140
E. Crossley, 58, Denmark-road, Wimbledon*	305	163

[The three lowest tenders out of thirty-four received.]

EAST GRINSTEAD.—For new vestries and alterations to Moat Church. Messrs. Macintosh & Newman, architects, Birkbeck Bank-chambers, High Holborn, London, W.C.:—

C. Rice	£980 0	H. Young	£740 10
I Waters	801 0	Morris Bros.	720 0
F. Brinkhurst ..	793 0	T. Webber, Crawley Down*	684 10
A. Peskett	785 0		

EYE.—For erecting an elementary school at Eye, near Leominster, for the Herefordshire Education Authority. Mr. A. Dryland, Architect to the Education Committee, Shirehall, Hereford:—

J. H. Davis ..	£1,432 15 0	W. James ..	£1,178 15 4
E. W. Wilkes Bevan & Hodges ..	1,339 19 0 1,219 14 6	W. Bowers & Co.	1,170 16 0
C. Cooke	1,192 0 0	J. Watkins & Son, Leominster* ..	1,092 8 2
W. Powell ..	1,190 8 8		

GLYNCORRWG.—For (1) Building an exhauster house; (2) supply and erection of purifiers, boiler, exhauster, and engine and pumps; (3) Re-setting a bed of five retorts, for the Urban District Council. Mr. W. P. Jones, Surveyor, Cymmer:—
(1) S. T. Rees, Aberavon* £75 0
(2) R. Dempster & Sons, Ltd., Elland* 412 10
(3) R. Dempster & Sons, Ltd., Elland* 98 0

GUISELEY.—For erecting a residence and stabling. Messrs. Empsall & Clarkson, architects and surveyors, 7, Exchange, Bradford:—

Masons: S. Mounsey & Son, Guiseley.
Joiner: W. M. Binns, Bradford .....
Plumber: A. Ross, Shipley .....
Plasterers: Walsh Bros., Guiseley ....
Slaters: R. Hartley & Sons, Idle..... } £2,187 10

HAYES (Middlesex).—For the erection of two villas for Mrs. Arlidge, of Wood End Green, Hayes. Messrs. Thomas & Thomas, architects, 191, Edgware-road, Paddington, W.:—

T. W. Crutchfield ..	£643	Chambers & Cowley	£500
J. Humber	550	R. Cooper*	494

HAYES (Middlesex).—For the erection of villa for Mr. Toger, Hayes. Messrs. Thomas & Thomas, architects, 191, Edgware-road, Paddington, W.:—

A. Winch	£315 10	T. W. Crutchfield*	£305 10

HENDON.—For making-up Ramsey and Argyle roads, West Hendon, for the Urban District Council. Mr. S. Slater Grimley, Engineer, Council Offices, Hendon, N.W.:—

British Paving & Granite Co.	£2,117 10 11	R. Ballard, Ltd.	£1,694 8 9
T. Adams..	1,720 4 6	F. Fowles ..	1,665 6 6
A. B. Champniss	1,703 15 0	A. T. Catley, Lloyd-square, W.C.*	1,605 19 4

IPSWICH.—For the enlargement of Springfield Council school, for the Education Committee. Messrs. Bisshopp & Cautley, architects, 32, Museum-street, Ipswich:—

W. Grayston	£2,586 10 0	Cubitt & Gotts	£2,285 0 0
E. Scott	2,576 0 0	M. Death....	2,275 0 0
R. Girling ..	2,497 0 0	H. Linzell ..	2,246 0 0
G. Grimwood & Sons....	2,493 0 0	Spencer, Santo, & Co., Victoria-st., Felixstowe*,	2,230 0 0
A. Sadler....	2,457 10 0	C. Roper	1,999 0 0
A. Gayford..	2,433 13 8		
E. Catchpole & Sons....	2,294 0 0		

KIRKCALDY.—For constructing a pipe sewer, with an outfall to low-water, and the necessary manholes, and other relative works, for the Town Council. Messrs. J. & A. Leslie & Reid, engineers, 72A, George-street, Edinburgh:—

W. Dobson ..	£3,664	5	9	R. C. Fergusson	£2,819	0	0
Blair & Whyte	3,194	15	1	G. Smith & Sons	2,797	5	0
Fisher Bros...	3,188	18	0	Stirling & Canonbury.	2,692	0	0
Henderson & Duncan ..	3,038	5	0	Backie & Peattie....	2,510	8	6
T. Forgan & Sons.....	2,995	4	4	J. Martin....	2,497	14	1
W. Mitchell & Sons	2,919	14	8	A. Fraser....	2,457	2	0
G. Mackay & Sons	2,910	18	9	A. Waddell & Sons.....	2,422	11	2
T. Christie ..	2,902	11	6	A. Gray & Co., Kirkcaldy*.	2,419	0	0
D. Gilmour ..	2,813	18	8				

LONDON.—For alterations and additions to warehouse on the North Quay of Regent's Canal Dock, for the Regent's Canal and Dock Company, under the supervision of Mr. J. Glass, manager. Plans by Messrs. Thomas & Thomas, Paddington:—

Patman & Fotheringham, Ltd. ..	£1,473	E. Lawrance & Sons, Ltd.	£1,236
Bull & Esdaile	1,330	Sheffield Bros.	1,210
		J. Chesaum & Sons*	1,163

LONDON.—For painting, whitewashing, and cleaning at Chelsea Infirmary, Cale-street, S.W., for the Guardians:—

W. Brooks & Co.	£470	0	0	S. T. Wright, Arthur-street*	£319	10	0
H. C. Payne ..	558	10	0	Lillie & Sons ..	307	0	0
T. Pearce	499	0	0	P. McCarthy ..	303	0	0
R. Dow & Co...	460	0	0	Victoria Sanitary Engineering Co...	298	0	0
Bigg & Co.....	420	9	6	H. Eames	298	0	0
H. Bowncan ..	427	0	0	H. Hussey	295	0	0
G. Wade	419	0	0	Callis & Co. ..	273	0	0
M. McCarthy	399	0	0	J. Scott Fean..	249	10	0
R. Isles, Ltd...	375	0	0				
W. Dudley	375	0	0				
Harvey & Co.	336	15	0				

LONDON.—For re-laying the footway of Beech-street, E.C., for the City Corporation:—
London Asphalte Co...... £105 6 6

LONDON.—For paving the carriage-ways of Fann-street and Bridgewater-square with hydraulically-compressed rock asphalte blocks, for the City Corporation:—

London Asphalte Co.* { Fann-street.... £211 6 3 / Bridgewater-sq. 302 6 3

NEWARK.—For rebuilding bridge over Witham, on the road leading from Claypole to Newark, for the Claypole Rural District Council. Mr. C. D. M. Trinder, District Surveyor, Brant Broughton, Newark:—
W. Smith, Newark* £380
C. Baines 379

NORWICH.—For footpath tar-paving and tar-macadam materials, for the Corporation. Mr. A. E. Collins, City Engineer, Guildhall, Norwich:—
*A. Wickham, 89, Quebec-road, Norwich, as follows: ½-in. footpath tar-paving, 17s. 6d. per ton; 1-in. tar-macadam, 16s. per ton; 1½-in. tar-macadam, 16s. per ton. Free on rail at station in Norwich.

NOTTINGHAM.—For house, Lucknow Drive, Mapperley Park, Nottingham. Messrs. A. R. Calvert & W. R. Gleave, architects, 18, Low-pavement, Nottingham:—
Maule & Co.* £779
[Lowest of ten tenders.]

NOTTINGHAM.—For alterations and additions to house, Park-row, Nottingham. Messrs. A. R. Calvert & W. R. Gleave, architects, 18, Low-pavement, Nottingham:—
F. M. Thompson & Sons* £598
[Lowest of seven tenders.]

PETWORTH.—For a block of three four-roomed cottages near Petworth, Sussex, for Mr. E. Herne. Messrs. Barrett & Driver, architects, 23, York-place, Baker-street, W.:—

Boxall	£400	Rowland Bros.,	
H. S. Loxwood	392	Horsham‡.....	£350

‡ Recommended for acceptance.

PONTARDULAIS.—For erecting a new mechanics' institute. Mr. W. Beddoe Rees, architect, 3, Dumfries-place, Cardiff:—

D. Jenkins.....	£2,232	D. Jones, Pontardulais‡	£1,800
T. Broad, Ltd.....	2,153	A. & A. Thomas ..	1,770
D. Davies	2,090		
G. Mercer	1,850		

‡ Accepted with modifications.

PRESTWICK (N.B.).—For enclosure walls, gateways, and keeper's lodge, and laying out grounds of new cemetery at New Dykes, for the Monkton and Prestwick Parish Council. Messrs. J. & H. V. Eaglesham, architects, 24, Wellington-square, Ayr:—
W. Guthrie, Windsor, Prestwick* .. £1,333 10 11

ROMFORD.—For kerbing Whalebone-lane, Chadwell Heath; Woodman-road, Great Warley, and Back-street, Rainham, for the Rural District Council. Mr. G. Lapwood, Highway Surveyor, Victoria-road, Romford:—
D. F. Jackson, Barking* £133 3 6

ROMFORD.—For making-up eight new streets at Emerson Park and part of a new street at Harold Wood, for the Rural District Council. Mr. E. G. Boden, Surveyor, Victoria-chambers, Victoria-road, Romford:—

F. Miskin	£14,364	W. & C. French	£10,914
W. G. Wilmott	12,565	Wilson, Border, & Co.	10,859
J. Shelbourne & Co.	11,982	Parsons & Parsons	10,823
J. Jackson	11,973	G. J. Anderson	10,647
W. Griffiths & Co.	11,612	Road Maintenance Co., Ltd.	10,168
D. T. Jackson	11,571	W. J. Wishby	10 074
Hewett & Sons, Ltd.	11,375	T. Free & Sons	9,964
Buxton & Jenner	11,345	H. F. White	9,430
J. Jackson	11,122	B. W. Glenny	8,762

SHANGHAI. — For the church of St. Ignatius, Shanghai, for the Catholic Mission. Mr. W. M. Dowdall, architect:—

	Taels.		Taels.
Yang Tse Ta	397,000	Eastern Construction and Engineering Co.	278,300
Ko Lai Chee	342,600	Shanghai Building and Investment Co., Ltd.	278,000
Zee Kuen Kee	292,250		
Oriental Construction Co.	284,500		

[All of Shanghai. The present value of one tael is about 2s. 7d. sterling.]

SHEFFIELD.—For extension of car pits at Tinsley car sheds, for the Tramways Committee of the Sheffield Corporation. Mr. C. F. Wike, City Surveyor, Town Hall, Sheffield:—

W. Craig, Manchester £1,357 7 4

SLIMBRIDGE (Gloucestershire). — For proposed Council School, Slimbridge, to accommodate 200 scholars. Mr. R. S. Phillips, Surveyor to the Education Committee, Shire Hall, Gloucester:—

	Common Brick Facing.	Pressed Brick Facing.
	£ s. d.	£ s. d.
Workman & Sons	2,442 3 11	2,462 3 11
W. T. Nicholls	2,189 0 0	2,200 4 6
W. Jones	2,160 0 0	2,193 10 0
A. S. Cooke	2,117 12 0	2,127 12 0
A. Estcourt & Son	2,100 0 0	2,124 0 0
Wall & Hook	2,038 0 0	2,071 13 0
H. J. Morgan & Sons	1,980 0 0	2,040 0 0
Byard & Sons	1,984 0 0	2,007 0 0
J. Gurney	1,987 0 0	1,998 10 0
Collins & Godfrey	1,970 0 0	1,993 0 0
Orchard & Peer	1,935 0 0	1,985 0 0
G. Dimery & Sons	1,960 5 3	1,978 19 5
S. Bloodworth & Son	1,950 0 0	1,975 0 0
W. Bowers & Co.	1,944 0 0	1,962 15 0
N. Baxter & Sons Stroud*	1,920 0 0	1,949 18 8

STOKE-UPON-TRENT. — For erecting school buildings at Harpfield, also playground, boundary wall, etc., for the Education Committee. Messrs. Lynam, Beckett, & Lynam, architects, Stoke-upon-Trent. Quantities by architects:—

School Buildings.

S. Heath, Victoria-street, Basford, Stoke-upon-Trent £2,063

Playground, Boundary Wall, etc.

S. Heath, Victoria-street, Basford, Stoke-upon-Trent £427

TERRINGTON ST. CLEMENT (Norfolk).—For the erection of Farmhouse, for Mr. W. Wing. Messrs. Walker & Walker, architects, Wisbech and Terrington:—

Tash, Langley, & Co.	£495 15	J. Parker	£435 0
T. Pryor	488 0	G. J. West	425 0
E. R. Lankfer	480 0	Elworthy & Co.	410 0
J. S. Johnson	445 0	H. W. Reeder	391 0
		J. W. Wilkinson*	330 0

THORNHAM.—For restoration of north aisle, Thornham Church, Norfolk. Mr. H. J. Green, architect, 31, Castle-meadow, Norwich:—

J. Cracknell	£436 0 0	R. Shanks, Hunstanton and Chatteris, Cambs.†	£340 0 0
R. Dye	387 9 6		
Tath, Langley, & Co.	342 1 10		

TRESILLIAN (Cornwall). — For alterations and additions to Council School, for the Cornwall Education Committee. Mr. A. J. Cornelius, architect, Truro:—

J. H. Crocker £254 10
H. Tippett, 34, Lemon-street, Truro*. 245 10

WEMBLEY (Middlesex).—For widening and improving Harrow main road at Deadman's Hill, for the Light Railways and Tramways Committee of Middlesex County Council. Mr. H. T. Wakelam, County Engineer, Westminster, S.W.:—

F. Fowles	£5,416 13 7
Pedrette & Co.	5,303 14 10
J. W. Pedrette	5,281 1 8
J. Shelbourne & Co.	5,065 14 6
A. B. Champniss	5,129 4 0
F. G. Brummell	5,112 0 8
H. Boyer	5,112 0 0
W. & C. French	5,107 1 0
H. Haynes	4,774 14 10
W. Griffiths & Co., Ltd.	4,752 6 3
G. R. Mann	4,711 0 0
T. Free & Sons	4,615 0 0
S. Kavanagh	4,492 0 0
G. Wimpey & Co.	4,389 0 0
Cunningham, Forbes, & Co.	4,315 19 2
Grounds & Newton	4,215 19 9
W. Neave & Son	4,092 0 0
T. Adams	4,037 14 11
C. Ford	3,791 0 0
T. Turner	3,783 7 0
J. Jackson	3,780 10 6
R. Ballard, Ltd.	3,757 0 0
J. & E. T. Bloomfield, 156, West Green-road, Tottenham*	3,726 6 7

WHITLEY.—For private street improvement works, Whitley and Monkseaton, for the Urban District Council. Mr. J. Moore, Surveyor, Council-buildings, Whitley Bay, R.S.O.:—

T. Brown	£4,135 13 8	W. Kennedy	£3,620 8 8
G. Thornton & Co.	4,100 0 9	G. Johnson	3,533 10 11
R. H. Nesbit & Son	4,040 16 5	M. D. Young, Elm-grove, Hexham*	3,531 1 7
G. G. Simpson	3,759 18 4		

WIGMORE.—For general repairs and renovations of the Wigmore Council School. Mr. Alfred Dryland, Architect to the Education Committee, Shirehall, Hereford:—

Bevan & Hodges	£332 5	J. Watkins & Son, Leominster*	£165 10
J. H. Davis	297 0		
Overton & Sons	202 18		

WOTTON.—For road works, Wotton, near Gloucester, for the Gloucester Rural District Council. Mr. F. E. Weaver, Surveyor, Lipton-chambers, Northgate-street, Gloucester:—

Ebor-road Repairs.

T. Starr	£100 0 0	W. Meek, Gloucester*	£77 19 6
Byard & Son	83 5 0		
Freeman & Jones	83 5 0		

Armscroft-road Repairs.

T. Starr	£171 10	Freeman & Jones, Gloucester*	£135 0
Byard & Son	141 9		
W. Meek	139 14		

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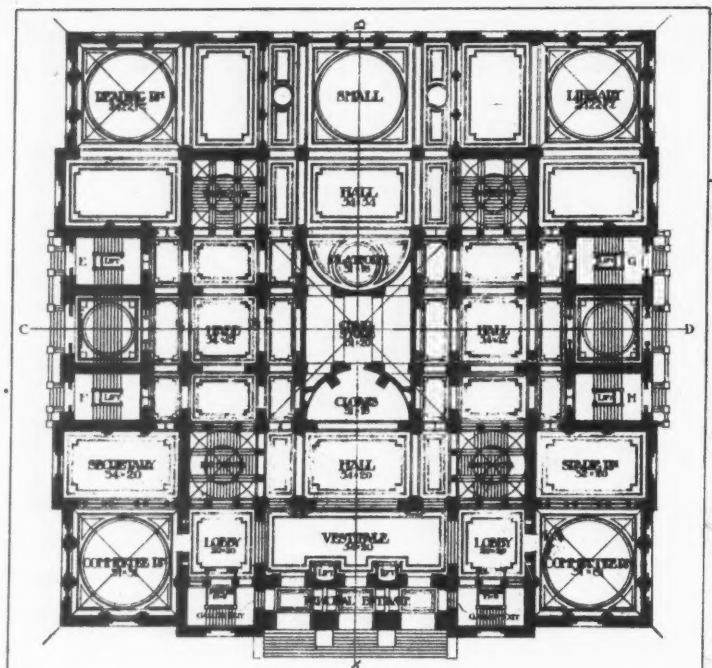
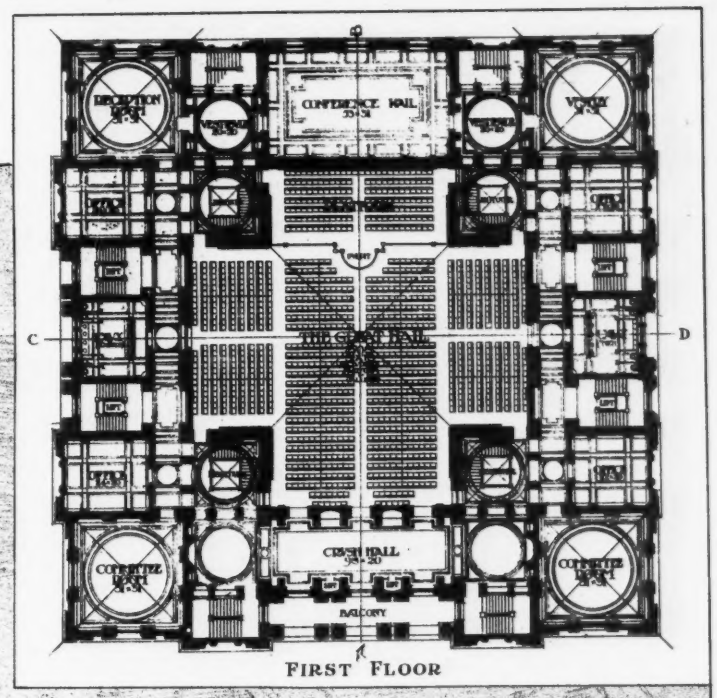


GROUND PLAN

WESLEYAN HALL COMPETITION.—DESIGN BY MR. C. E. MALLOWS, F.



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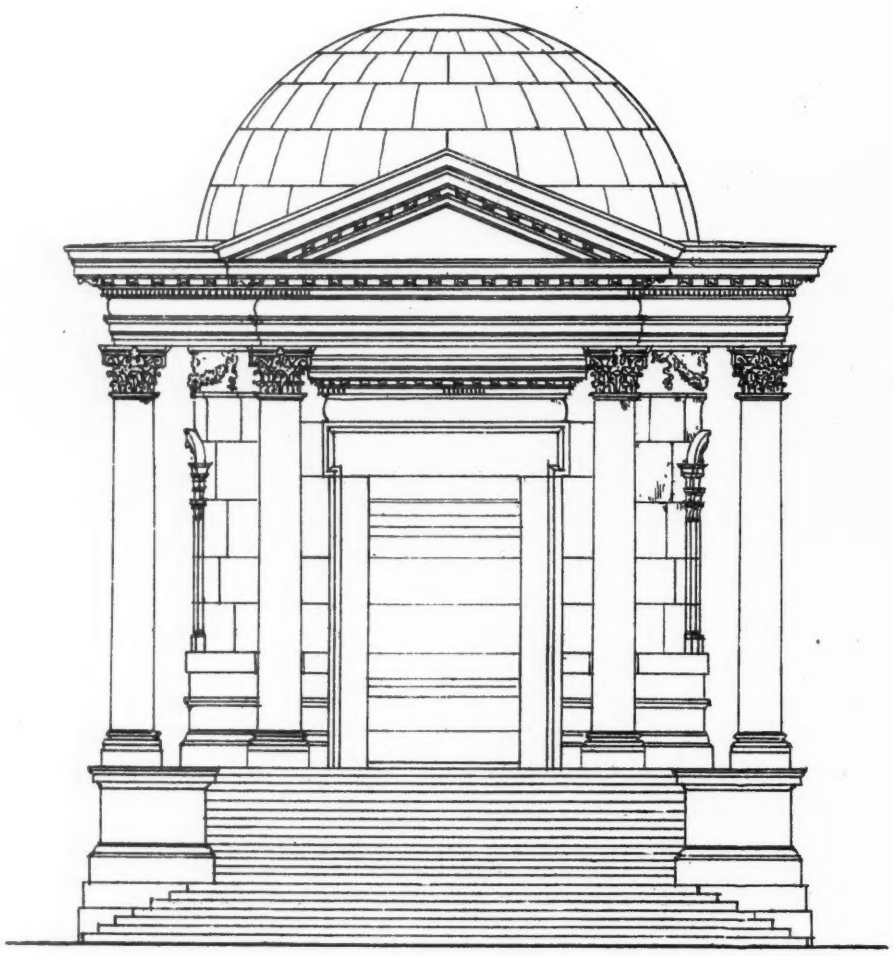
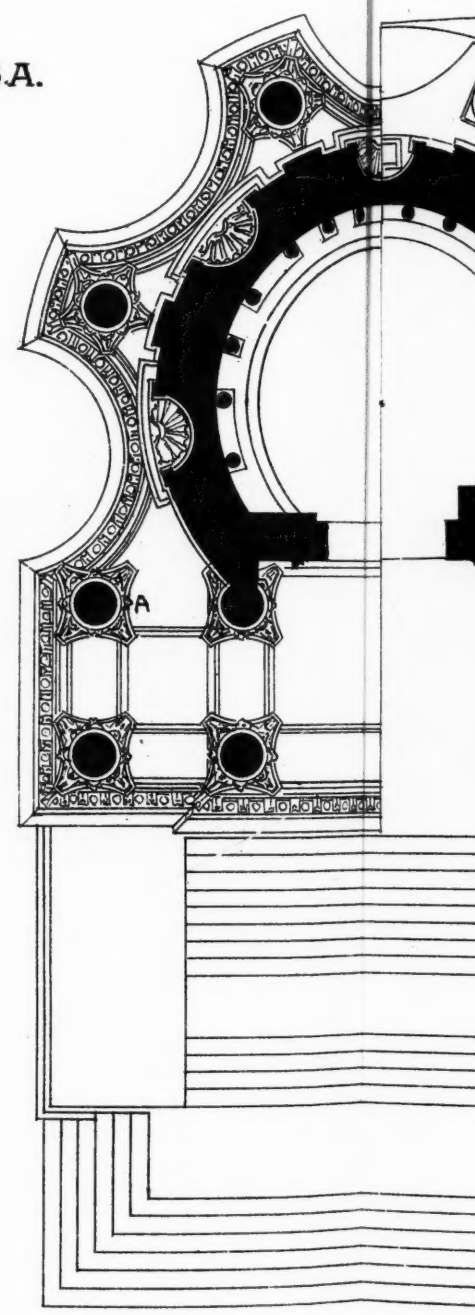
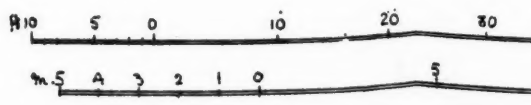
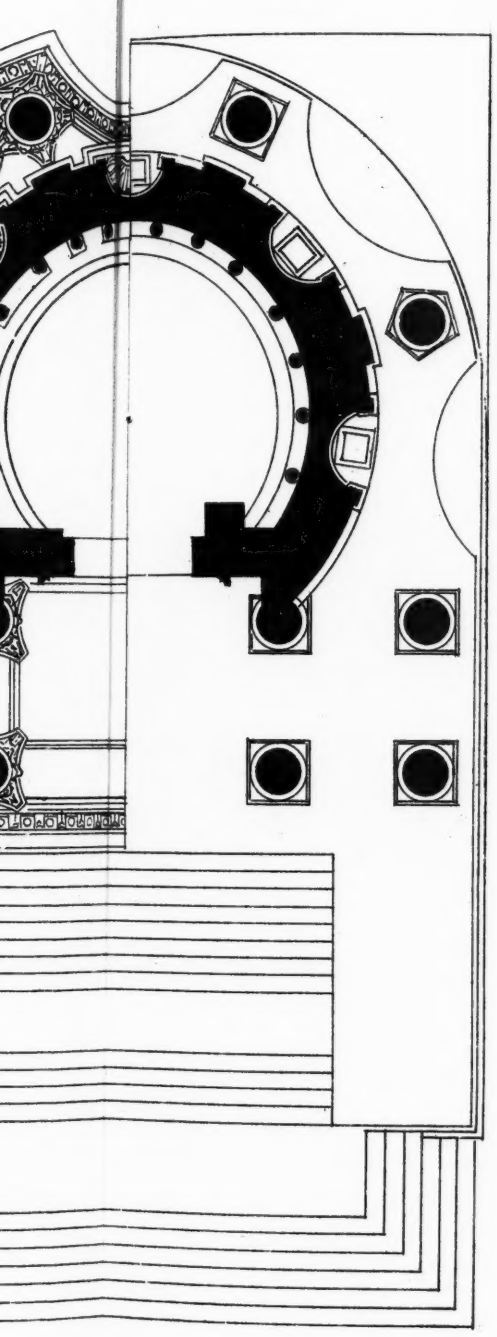
BAALBEK

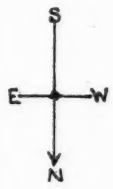
AS RESTORED BY Mr R. PHENÈ SPIERS F.R.I.B.A.

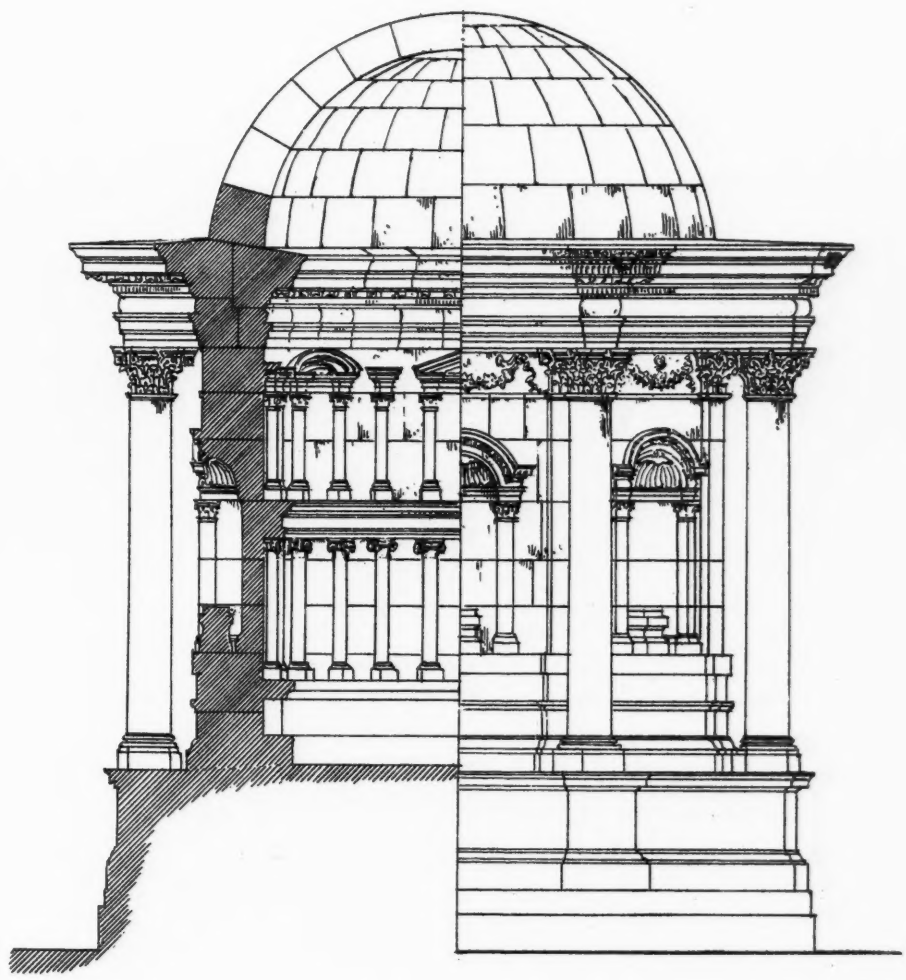


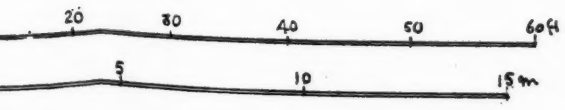












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